ENVIRONMENTAL ASSESSMENT

GREEN ISLAND WILDLIFE AREA HABITAT DEVELOPMENT AND ENHANCEMENT UPPER MISSISSIPPI RIVER, POOL 13

JACKSON COUNTY, IOWA

MAY 1988

US Army Corps of Engineers
Rock Island District

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FINDING OF NO SIGNIFICANT IMPACT

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I. PURPOSE AND NEED FOR ACTION

A. Project Authority

The Iowa Department of Natural Resources (DNR) is an active assessed member of the Green Island Levee & Drainage District No. 1. Water level operations occur under the authority set out in an agreement between the Green Island Drainage District and the Iowa DNR. The agreement was signed October 8, 1980, by the Jackson County Supervisors, acting as trustees for the district. Provisions allow for normal water levels on the area to be held at 585.6 feet above mean sea level (MSL) between December 15 and August 15 of the following year. Additionally, a level of 589.0 feet MSL may be maintained between August 15 and December 15 of each year.

The DNR manages 3,625 acres of land at the Green Island Wildlife Area, of which 2,722 acres are held in fee title ownership by the U.S. Army Corps of Engineers. The remaining 903 acres of land are owned by the DNR. Management rights to this land were granted to the U.S. Fish and Wildlife Service and then sublicensed to the Iowa DNR by way of a cooperative agreement dated October 11, 1963. An annual management report is submitted to appropriate Federal agencies each year detailing the DNR's management of the area.

B. Project Background

The Green Island Wildlife Area and adjacent private lands are protected from Mississippi River floodwaters by a 6-mile-long levee. The Green Island Drainage District constructed the levee in 1927 to protect and enhance the privately owned agricultural lands located on the floodplain. During the 1930's the U.S. Army Corps of Engineers acquired fee title ownership to 2,722 acres of this floodplain land for construction of the Mississippi River lock and dam system. Subsequently, these lands were incorporated into the Upper Mississippi River Wildlife Refuge system through an agreement with the U.S. Fish and Wildlife Service. In 1963, the U.S. Fish and Wildlife Service sublicensed the management of these lands to the DNR through a perpetual cooperative agreement.

This agreement stipulates that management of these lands by the DNR shall be in connection with the National Migratory Bird Management Program. In accordance with this agreement, the DNR established the primary goal of managing the Green Island Area as a major waterfowl production and harvest area. Secondary goals identified for the area

include: 1) production and harvest of furbearers, 2) maintenance and enhancement of habitat for threatened and endangered species, raptors, herons and egrets, and 3) the development of public use facilities to encourage recreational uses of the area including hunting, trapping, fishing, boating, nature study, primitive camping, hiking, photography, picnicking and outdoor classroom study.

The initial development plan for the area identified a two phase program for achieving these goals. Phase 1 is the acquisition of 1,150 acres of land adjacent to the Green Island area. Phase 2 includes development of this land by constructing facilities to permit water level control over the area. The acquisition phase of the plan was initiated in 1972 and has resulted in fee title ownership of 903 acres. A preliminary evaluation was initiated in 1975 to assess feasible alternatives with respect to development, and a master plan for the area was completed in 1979 identifying a preferred plan of action.

The DNR has decided to pursue development of the area to achieve previously stated goals. Detailed engineering plans and specifications have recently been completed, and are included as Appendix B. Implementation of the preferred alternative will increase the acres of wetland habitat, provide better public access to the site, and improve boating access on the area.

C. Problem

The Green Island Wildlife Area is an important feeding and resting area for migratory waterfowl. The backwater and wetland habitats existing on the area are also important production areas for resident waterfowl populations. Both consumptive and nonconsumptive public use on the area is high because of the large numbers of waterfowl and raptors using the area, particularly during the fall migration.

The Green Island Wildlife Area has significant waterfowl management potential because of its relatively level topography, its close proximity to a reliable and convenient water supply (Mississippi and Maquoketa Rivers), and the existing boundary levee which prevents the area from being flooded on a regular basis. These three features are necessary for the development of water level control on the area which is the primary and most effective method of managing wetland habitats. Currently this management tool is not available on the area. Once developed, water level control will permit the creation of additional wetlands and shallow water habitat conditions needed to manage waterfowl.

Until recently, the DNR did not control enough land within the project area to permit the development of water level control capabilities. The DNR's land acquisition program has progressed to the point that development can now proceed in accordance with existing agreements, without significantly affecting adjacent private landowners.

Although a 100-acre private inholding still exists within the project area, the development and subsequent management of the area has been planned to avoid impacting this area. The DNR will continue its

efforts to purchase or trade for this inholding on a willing seller basis.

II. PROJECT DESCRIPTION AND LOCATION

A. Location

The project area is located in Mississippi River Pool 13, Jackson County, Iowa, approximately 8 miles southeast of Bellevue, Iowa, at River Miles 546 through 548.6 (see Plan Sheet 1).

B. Proposed Work

The purposes of this project are to improve habitat conditions for marsh-dependent wildlife species and to provide public use facilities for recreationists. Once completed, the proposed action is expected to benefit a variety of wildlife species including several species of ducks and geese, herons, bitterns, kingfishers, grebes, hawks, eagles, killdeer, plovers, gallinules, otter, mink, beaver, raccoon, muskrat and several amphibians and reptiles associated with marsh ecosystems. The development of public use facilities is intended to provide safe and convenient access and to reduce congestion on adjacent county roads.

The preferred alternative will create a 2,590-acre area completely surrounded by dikes and levees. This area will be subdivided by construction of the proposed Channel 4 dike from the county road to the Mississippi River boundary levee. This action will create two impoundments which can be managed independently. DNR plans are to flood the impoundment located west of the Channel 4 dike (1,573 acres), and maintain the existing wetland habitats in the impoundment located east of the Channel 4 dike (1,017 acres).

The recommended design consists of the following major components:

1. Increasing the height of 11,400 lineal feet of existing dikes and constructing 21,600 lineal feet of new dikes. The dikes will subdivide the Green Island Wildlife Management Area which is located within the levee that surrounds the Green Island Levee and Drainage District No. 1. Subdividing the area will allow better and more selective control of water levels and will provide increased potential for flooding portions of the area that previously could not be flooded because of drainage district restrictions.

   Those dikes that will have public access by vehicles will have a 24-foot top width, 1 on 3 sideslopes, and an 18-foot wide crushed stone granular surface. Other dikes will have a 16-foot top width, 1 on 3 sideslopes, and pull-off areas spaced at approximately 1,000 feet. The dikes will be constructed to an elevation approximately 6.5 feet above the existing normal water level in the wetland, which will allow water levels on selected areas to be raised a maximum of 3.5 feet above normal (see Plan Sheets 6, 13 & 14 for typical sections of dikes).

The dikes, which will require about 222,000 cubic yards of excavation, will be constructed from adjacent and borrow site soils using conventional earth-scraping and earth-moving equipment. Almost all of the borrow material will come from sites that are presently used for agricultural purposes. The majority of the borrow sites are located within areas that potentially can be flooded to elevations that will also flood the lowered borrow sites. Borrow sites near the Smith Creek diversion structure will become a new wetland area (about 23 additional acres), made possible by raising the height of approximately 3,200 lineal feet of existing dike. The new Smith Creek wetland will beneficially act as a sediment trap for the creek during the times that its flows are diverted through an existing diversion structure into the Green Island Area. Dike construction will require the clearing of about 10 acres of bottomland forest, the filling of approximately 9 acres of wetland, and the removal of 16 acres of land from agricultural production (see Plan Sheets 2-6 for locations of dikes and borrow areas).

2. Increasing the size and elevation of three existing parking lots and constructing two new parking lots to provide the additional parking space needed for the expected increase in public use of the area. The three parking lots that will be expanded will provide parking for approximately 110 vehicle/boat trailer units (see Plan Sheets 8, 10 & 11). The two new parking lots will provide parking for about 24 vehicles (see Plan Sheets 9 & 14). All of the parking lots will be surfaced with crushed stone granular surfacing. The parking areas will be at about the same height as the dikes, and the embankments will have 1 on 3 sideslopes. Approximately 51,000 cubic yards of excavation will be required for construction of the parking lots, and the material will be borrowed from the same borrow sites as the dike fill material. Construction of the parking areas will require the clearing of 2 acres of bottomland timber and the filling of 1 acre of wetland.

3. Excavation of various types of channel including: construction of 8,200 lineal feet of new drainage channels, cleanout of 18,400 lineal feet of existing drainage channels, construction of 3,000 lineal feet of new boat channel, cleanout of 8,800 lineal feet of existing boat channels, and construction of 23,000 lineal feet of environmental channels. Construction of the channels will require excavating about 154,000 cubic yards of material. Approximately 126,000 cubic yards of channel excavation will be used in the construction of dike and parking lot embankments, and 28,000 cubic yards of channel excavation will be wasted on the sideslopes of the existing drainage district levee and on designated excess excavation waste sites.

   The construction of the channels will require the clearing of 3 acres of bottomland timber. About 14 acres of agricultural ground will be excavated to construct the channels and will therefore be taken out of crop production. About 4 acres of wetland will be used to construct the new boat channel and to widen the existing boat channels. The excavation of environmental channels will

temporarily disturb 8 acres of existing wetland that will be beneficially altered by the activity. Since all of the channels will contain standing water after construction, the impact of the channel excavations will be a net increase of 30 acres of aquatic environment, including 20 additional acres of wetland. There also will be an improvement of 35 acres of existing aquatic habitat.

Excavation of the channels will be performed by land-based dragline. The material will be side-cast onto dikes to provide additional dike section, stability, and future borrow. Boat channels will be excavated to provide a minimum maintained water depth of 5 feet below the normal pool elevation of 585.6 feet MSL. Occasional deep holes approximately 9 feet in depth will be provided in some channels for diversity and fisheries benefits (see Plan Sheets 6, 13 & 14 for typical channel sections).

4. Water control structures will be installed to provide for control of water levels in the subdivided aquatic environment. Gates will be installed in some of the water control structures, and stop-log guides will be installed in all of the structures (see Plan Sheets 14-19). Two of the water control structures will be placed lower than necessary for water control, but low enough to provide for fish movement between the proposed subdivisions of the existing aquatic habitat.

5. Culverts will be installed in the drainage channels to provide for water movement through channel crossings (see Plan Sheet 15). The culverts will be installed at an elevation that places them approximately half in and half out of standing water in the channels.

6. Concrete boat ramps will be installed at four locations, including two single-lane ramps and two double-lane ramps (see Plan Sheet 12).

7. Riprap will be placed at selected locations to reduce the effects of erosion caused by floods, storm runoff through water control structures, and wave action caused by boats and the wind.

8. A reliable source of water is necessary to create optimum habitat conditions. Water will be pumped and/or diverted onto the project area beginning August 15 of each year. An engineering study will be conducted to select the location and design for a pumping station. Two tentative sites have been identified for pumping water from either the Maquoketa or the Mississippi River (see Plan Sheets 3, 5 & 7 for locations of pumping station study sites). Preliminary estimates indicate that it will require 30 days of pumping at a rate of 40,000 gallons per minute to fill and maintain adequate water levels in the new pool.

III. ALTERNATIVES

Developing water level management capabilities on the area is limited to two techniques: 1) controlling the inflow, outflow, and duration of water on the area, and 2) exposing the shallow water table through some type of

excavation or earth removal. The alternatives to the preferred action that were considered are described below:

A. Pumping Without Development

A pumping station could be constructed along the Maquoketa or the Mississippi River, enabling about 2,460 acres of the area to be flooded. Water would be allowed to flow over this entire area without being directed by dikes and control structures. Engineering surveys indicate that the east half of the area is approximately 2 to 3 feet lower in elevation than the west half. As a result, once optimum water levels were reached on the west half of the area, water levels on the east half of the area would be too deep and in excess of what is needed for management purposes. This alternative alone, without the development of dikes and water control structures, does not permit optimum water level management capabilities on the entire area.

B. Expose Water Table

Engineering evaluation shows that the water table throughout the Green Island Area is within 1 to 3 feet of the terrestrial surface. Through this alternative, potholes, level ditching or some other type of dredging/excavation would be done to expose the water table and create shallow water areas. DNR biologists estimate that approximately 800 to 1,000 acres of new shallow water areas could be developed on the area using these methods. Because of water conditions, soil types, and other factors, this alternative is considered to be less cost effective with respect to both development and maintenance than the preferred alternative. Experience has shown that it is more economical to build a new lake than to dredge an existing lake. The same principle applies to and holds true for this alternative.

Potholes and level ditches are generally considered to be enhancement measures. Although additional wetland habitat is created, total marsh management capabilities are incomplete. The ability to perform drawdowns for the purpose of stimulating vegetative growth would not be available. Water levels in these shallow water areas would be directly influenced by Mississippi River elevations. This alternative is not considered to be acceptable because it does not completely satisfy management objectives nor does it provide flexibility with respect to water level control.

C. Subdivision of Proposed Impoundment

Water level management capabilities could be enhanced by subdividing the impoundment proposed in the preferred alternative. This alternative evaluates the development of two additional dikes for the purpose of subdividing the impoundment created between the Fish Lake Road dike (123-04 on Plan Sheet 2) and the Channel 4 dike (123-02 on Plan Sheet 2). The exact locations of the two additional dikes have not been determined, but the general locations are as follows: Dike 1 would start at the north end of the Fish Lake Road Dike and run easterly to connect with the Channel 4 Dike at Snag Slough; Dike 2 would run parallel to Dike 1, also connecting to the Fish Lake Road

dike and Channel 4 dike, but at a location approximately 3/4 of a mile to the south of Dike 1.

This alternative is desirable because it provides more precise water level control. Drawdowns and water level manipulations can be performed independently within each subimpoundment creating optimum habitat conditions. These crossdikes also would improve water level conditions by reducing lateral groundwater movement to the Mississippi River.

The DNR is still considering this alternative and may implement it at a later date. These dikes could be constructed in the future following completion of the preferred action. Funding limitations prohibit serious consideration of this alternative at this time.

D. No Action

The No Action alternative is not desirable because it does not satisfy goals and objectives for the Green Island Area.

IV. AFFECTED ENVIRONMENT

The Green Island Wildlife Area encompasses 3,355 acres of Mississippi River floodplain land and 270 acres of woodlands and agricultural fields located on the river bluff adjacent to the floodplain. At elevation 585.6 MSL, the area impacted by the preferred action includes a variety of habitat types including shallow backwater lakes, wetlands, bottomland forest, and agricultural fields. The affected environment (2,590 acres) is that area bounded by dikes 123-07 and 123-01 on the south, the boundary levee on the north and east, and dikes 123-04, 123-03, and 123-05 on the west (see Plan Sheet 2).

Floodplain soils associated with the project site are poorly drained alluvial deposits subject to a high water table and flooding from the Maquoketa and Mississippi Rivers. They are comprised of Nodaway silt loam and occur on a 2 percent slope throughout the floodplain. Former Mississippi River chutes and side channels are connected by five drainage channels excavated during initial levee construction and drainage district establishment in the 1920's. Boat access through this backwater complex is possible, but dependent upon prevailing water levels.

Native vegetation on the area is primarily bottomland timber consisting of silver maple, cottonwood, green or black ash, pin oak, red elm, river birch, sycamore and black willow. A few widely scattered northern pecan and black walnut are also present. Understory species include poison ivy, Virginia creeper, stinging nettle, dogwood, Solomon's seal, blackberry, elderberry, wild grape, sumac, dogwood, ginseng, and buttonbush. Willow and silver maple invasion into adjacent wetlands and agricultural lands occurs annually and is retarded either by flooding, cultivation, or prescribed burning. All age classes are present, with trees varying from seedlings class to 40-inch-diameter sawlogs. Several stands of 30- to 60-year-old silver maple, ash and cottonwood are also present on the bottomlands. Bottomland timber in the affected area totals 360 acres.

Grasslands within the project area are dominated by dense stands of reeds canary grass and are classified as Type 1 or 2 wetland (Palustrine, emergent, temporarily flooded or saturated). This habitat type (1,118 acres) occurs primarily in transitional zones between wetland sedge borders and dryer agricultural lands. Other vegetative species include smartweed, wild millet, water plantain, nut sedge, and foxtail millet. Domestic varieties of bluegrass, bromegrass, and clovers have been seeded on the levee to reduce levee crown and slope erosion.

Approximately 202 acres of agricultural lands are managed through cash rent contracts with private individuals. Corn, soybeans, and winter wheat are grown annually on these lands as sources of food for wildlife and to retard woody invasion. All agricultural lands are managed according to a Soil and Water Conservation Plan prepared specifically for the area by the USDA, Soil Conservation Service. Approximately 10 percent of all row crops are left unharvested for wildlife.

Wetlands (palustrine, emergent, semipermanently or permanently flooded) comprise approximately 910 acres within the affected area. The existing boundary levee has protected these wetlands from excessive siltation and has allowed them to remain relatively stable. Water depths at elevation 585.6 feet MSL range from occasional 10-foot-deep holes in Snag Slough to the more common 3 foot depth in Densmore and Blakes Lakes. Dominant emergent vegetation includes river bulrush, cattail, arrowhead, water lily, duckweed, water smartweed and buttonbush. Submergent plants include coontail, pondweed, and filamentous algae. The open water to vegetation ratio varies from year to year as a result of unpredictable water levels.

Sport fishery species present on the area are primarily largemouth bass, bluegill, crappie, bullhead and northern pike. Rough fish species including carp, bowfin and buffalo are also common. The Green Island Area is considered too shallow to afford a consistent and manageable fishery resource. Frequent winter fish kills caused by low water, thick ice and heavy snow cover often result in high fish mortality. The fish population is replenished by entry through the water control structures in the flood levee, or through periodic levee breaks that occur as a result of river flooding. Due to the shallow nature of the Green Island Wildlife Area, no intensive fish management programs are considered feasible or warranted at this time. (Personal communication, M. Conover, IDNR).

The Green Island Wildlife Area is a very important migratory bird and furbearer habitat. Its location, being situated midway in a continuous chain of Federal wildlife refuges along the Mississippi River flyway, places additional emphasis and importance on managing this area for waterfowl. Food and cover manipulations practiced on the Federal refuges and the Green Island Area have encouraged the use of these river corridor areas as migratory resting points and as production areas for resident waterfowl. Hawks, eagles, and other raptors also frequent these areas during periods of migration.

Furbearer use of the area is influenced by the previous year's water level and the vegetative condition. Muskrat is the primary furbearer, with mink, raccoon, fox, oppossum, beaver, and skunk occurring in lesser numbers.

Endangered Species

Consultation with and review of records compiled by the Preserves and Ecological Services Bureau, IDNR, shows that two state listed and one federally listed species frequent the site.

The federally listed and endangered bald eagle (Haliaeetus leucocephalus) is a common winter time resident on the area, using it primarily for feeding and roosting. Once the backwater areas are frozen, these birds leave the area and congregate around the open tailwaters of the locks and dams. IDNR records show the location of an active eagle nest on the Pleasant Creek Wildlife Refuge approximately 2 miles northwest of the Green Island Area. Eaglets fledged from this nest in both 1986 and 1987.

State listed species which have been documented on the project area are the red-shouldered hawk (Buteo lineatus) and the river otter (Lutra canadensis). The red-shouldered hawk is listed as endangered in Iowa. It was last observed nesting on the project area in 1983 near Murphy Lake. Although no sightings have been documented since 1983, habitat conditions are considered favorable. DNR personnel will be monitoring the project area this spring in an effort to document nesting activity. If nesting activity is found, development within 400 meters of the nest site will be delayed from March 15 to June 15.

River otters have been observed on the project area in both 1986 and 1987. Except for temporary disturbance resulting from development, the proposed action is expected to improve habitat conditions for this species.

The northern monkshood (Aconitum noveboracense) is listed as threatened and has been documented in Jackson County. The habitat requirements of this plant may be present in the bluffs located adjacent to the project site, an area which will not be impacted by the proposed action. In all likelihood, it is not present in the project site.

The Iowa pleistocene snail (Discus macclintocki), an endangered species, is also known to occur in Jackson County. Suitable habitats for this species are primarily algific, talus slopes which are developed over the entrances to small fissures and caves. This habitat type may be present in the bluff area located adjacent to the project site. Activities associated with the proposed action will not impact this area.

Two state endangered plant species, kitten-tails (Besseya bullii) and shooting star (Dodecatheon amethystinum) are known to occur on the bluff located adjacent to the project site. The habitat requirements of these plants preclude their presence on the project site.

V. ENVIRONMENTAL IMPACTS OF THE PREFERRED ACTION

The effects of the preferred plan are summarized in table 1.

TABLE 1

Effects of the Preferred
Plan on Natural and Cultural Resources

Types of Resources	Authorities	Measurement of Effects
Air quality	Clean Air Act, as amended (42 U.S.C. 165h-7, et seq.)	No effect.
Areas of particular concern with the coastal zone	Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1451, et seq.)	Not present in planning area.
Endangered and threatened species critical habitat	Endangered Species Act of 1973, as amended (16 U.S.C. 1531, et seq.)	No effect.
Fish and wildlife habitat	Fish and Wildlife Coordination Act (16 U.S.C. 661, et seq.)	Increased productivity of wetland resulting from improved water level management capabilities.
Floodplains	Executive Order 11988, Flood Plain Management	No effect.
Historic and cultural properties	National Historic Preservation Act of 1966, as amended (16 U.S.C. 470, et seq.)	No effect.
Prime and unique farmland	CEQ Memorandum of August 1, 1980; Analysis of Impacts on Prime or Unique Agricultural Land in Implementing the National Environmental Policy Act	Not present in planning area.
Water quality	Clean Water Act of 1977, as amended (33 U.S.C. 1251, et seq.)	There will be a temporary increase in turbidity associated with channel dredging and dike construction.
Wetland	Executive Order 11990, Protection of Wetlands, Clean Water Act of 1977, as amended (42 U.S.C. 1857h-7, et seq.)	Enhancement of up to 1573 acres of forested and bottomland wetland habitat.
Wild and scenic rivers	Wild and Scenic Rivers Act, as amended (16 U.S.C. 1271, et seq.)	Not present in planning area.

A. Economic and Social Impacts of Preferred Action

The project is located in Jackson County, Iowa, approximately 8 miles southeast of the community of Bellevue, Iowa. Population trends for Jackson County indicate a slight loss in population during the past 5 years. It is expected to remain stable through 1990 (see table 2).

TABLE 2

Population Trends for the Project Area, 1980 through 1990

	1980	1985	1990	Percent Change 1980-85	1985-90
City of Bellevue, IA	2,500	2,300	2,200	-8.7	-4.3
Jackson County, IA	22,500	22,300	22,300	-0.9	0.0
State of Iowa	2,913,800	2,905,400	2,913,500	-0.3	0.3

1. Community and Regional Growth

No short- or long-term impacts to the growth of the entire community would be realized as a result of the project. Long-term impacts to the immediate project area would be more pronounced than impacts to the community as a whole. The project would indirectly improve recreational opportunities at the Green Island Area by increasing the attractiveness of the area as a destination for recreationists interested in hunting, wildlife observation, or fishing. The addition or expansion of campgrounds or other types of development might occur as a result. No significant impacts to regional growth would be expected.

2. Displacement of People

No residential displacements would be necessitated by the proposed development project.

3. Community Cohesion

The project site is located in rural surroundings, with limited residential development in the vicinity. The site currently draws a large number of recreationists; while the project might indirectly increase the number of recreationists visiting the Green Island Area, this increase is not expected to adversely impact area residents or property owners. Due to the nature of the project and its limited area of influence, no significant impacts to community cohesion would be noticed.

4. Property Values and Tax Revenues

The potential value of property within the project area might increase slightly as a result of the proposed project. This land is state and federally owned, however, so an increase in its value would not increase local tax revenues. A small increase in boat ownership and purchases might

result. Tax revenues would rise as a result of increased sales tax and increased boat, fishing, and hunting license fee revenues.

5. Public Facilities and Services

The project site is state and federally owned and zoned for low density recreation. The project would positively impact public facilities by enhancing wildlife habitat and by improving conditions for user access. If no action is taken, recreational opportunity at the Green Island Area and habitat management capabilities will remain well below their potential.

6. Life, Health, and Safety

Currently, the Green Island Area poses no threat to life, health, or safety of recreationists or others in the area. The project would not affect current conditions regarding these areas of concern.

7. Employment and Labor Force

Construction of the proposed project would slightly impact short-term employment in the project area. Based on the scale of the project, Jackson County has a large enough labor pool to absorb project needs without noticeable impact. The project would not directly affect the permanent employment or labor force in Jackson County. Indirect impacts to long-term employment would be related to any future commercial development in the area (e.g., campground construction or expansion).

8. Business and Industrial Development

Changes in business and industrial activity during construction of the project would not be noticed. Long-term impacts to business and industrial development would be related to tourism and recreational activities. The project would require no business relocations.

9. Farm Displacement

No farms would be affected by the proposed development project, as the project site is located entirely on state and federally owned land. A 100 acre private inholding, located outside of the impacted area, will not be affected by development or future management.

Currently, 108 acres of land within the project site is in agricultural production and leased to private individuals. As a result of the preferred plan, 55 acres will be removed from production and converted to other purposes including wetland habitat and public use facilities.

The land within the project site has never been drained and is subject to flooding during the growing season. As a result, none of the soils are considered to be prime and unique farmland. (personal communication. M. LaVan, SCS)

10. Noise Levels

Heavy machinery would generate an increase in noise during construction. This increase would disturb users at the Green Island Area. However, the

project site is located in an area with limited residential or other types of development. No significant long-term noise impacts would result.

B. Economic and Social Impacts of Nonpreferred Alternatives

1. No Action Alternative

The socio-economic impacts associated with the No Action alternative would not greatly differ from existing conditions. Without the proposed action, existing fish habitat would remain basically the same. Wildlife habitat and wetland areas would be subject to woody invasion unless specific efforts are taken to control it. Recreational use of the area would stay the same or possibly decrease depending on habitat conditions and the condition of public use facilities.

2. Nonpreferred Action Alternatives

Three action alternatives in addition to the preferred alternative have been identified. The socio-economic impacts associated with these alternatives would be very similar to those resulting from the preferred alternative.

C. Natural Resource Impacts of Preferred Action

1. Man-Made Resources

Dredging of the channels along the Channel 4 dike and the Fish Lake Road dike may result in a slight increase in water seepage through these dikes. This seepage is considered to be negligible and should not affect overall management of the area.

2. Natural Resources

The project has been designed so that the proposed construction activities will have a net beneficial environmental impact regardless of the management practices utilized after the construction has been completed.

Table 3 summarizes the expected impacts on the primary land uses directly affected by the proposed construction activities. The impacts associated with the proposed future management of the area are also discussed. The project design provides for the following environmental concerns:

a. The existing normal water surface elevation at the project site is 585.6 feet MSL, established by an agreement with the Green Island Levee and Drainage District No. 1 and controlled by setting the overflow weir, in existing water control structures at that elevation. New drainage channels, dikes, and water control structures will give the capability for the water surface of a portion of the project area to be raised to as high as 589.0 feet MSL, annually between August 15 and December 15, in accordance with an agreement with the aforementioned Drainage District. The proposed Smith Creek

TABLE 3

Impacts of Proposed Construction Activities on Land Use;
Primary Land Use and Acreage of Impacted Land Before and After Construction

	Land Use Before	Acres Before	Change	Acres After	Land Use After	
Aquatic Environment; 49 Acres	Boat Channel	20	+3	3	New boat Channel	Aquatic Environment; 79 Acres (Net gain of 30)
			+1	21	Widened Existing Boat Channel	
	Wetland	22	-10	0	Wetland filled by new Embankments	
			+11	11	New wetland at elev. 585.6 MSL	
			+23	23	New Smith Creek wetland, at elev. 587.6 MSL	
			0	8	Improved Wetland	
			-4	0	Wetland converted to boat channel	
	Drainage Channels with Standing Water	7	+6	6	New drainage channels with standing water in them	
			0	7	Deepened existing drainage channels	
Terrestrial Environment; 147 Acres	Mixed Cover: Old dredge spoil sites, fence row poorly drained areas, etc., left undisturbed for several years	3	+4	4	Excess excavation waste areas, seeded and left undisturbed	Terrestrial Environment; 117 Acres (Net loss of 30)
			-1	0	New dike and parking lot embankments	
			0	2	Areas to remain with mixed cover	
	Timber: bottomland, embankments, and old dredge spoil sites	19	-3	0	Timber cleared for new wetland	
			-12	0	Timber cleared for new embankments	
			0	4	Disturbed timber areas, 40-60% survival rate	
	Agricultural: crop lease areas and wildlife food plots	108	-23	0	New Smith Creek wetland	
			0	55	Borrow and disturbed areas restored to Agricultural uses	
			-8	0	New wetlands	
			-6	0	New drainage channels	
			-16	0	New and upgraded dike and parking lot embankments	
	Unsurfaced Dike and Parking Lot Embankments	12	+31	43	New and upgraded dike and parking lot embankments seeded	
	Granular Surfaced Areas (Roads and Parking lots)	5	+4	9	Granular Surfaced Areas	
196	Totals:	196	0	196		196

wetland will be raised in elevation to approximately 587.6 feet MSL, resulting in 23 acres of new wetland.

b. The accumulation of silt in the backwater areas of the Green Island Area is causing accelerated rates of succession from aquatic habitat (i.e., shallow waters, emergent and submergent vegetation), to scrub/shrub wetland, to bottomland forest (i.e., forested wetland of willow and silver maple). This succession will result in a loss of productivity of fish, waterfowl, and other water-dependent fauna. A reversal of this trend is considered to be environmentally beneficial. Therefore, the net increase of 30 acres of aquatic habitat (20 of which will be wetland), due to this project, will be a beneficial impact. Two traditional techniques to restore habitat impacted by sedimentation are to raise water levels, or to directly remove sediment by excavation or dredging; both methods will be employed by this project to restore and improve the aquatic habitat.

c. Besides accelerating undesirable succession, silt and sedimentation exacerbate dissolved oxygen depletion. As depth decreases due to sedimentation, a smaller volume of water is left to retain dissolved oxygen which is vital to all aquatic life. Dissolved oxygen concentrations can fluctuate widely in shallow water, causing stress or massive fish kills.

   Increased water depths that will accompany the channel excavation associated with this project will help increase the dissolved oxygen concentrations and will therefore increase the aquatic habitat value significantly. Also, much of the sediment from the Smith Creek diversion will be confined to the new Smith Creek wetland, greatly benefitting other existing wetland areas.

d. Deeper and more extensive channels also will have the following beneficial effects: provide refuge for fish from stressful conditions such as high heat and low dissolved oxygen, attract and provide habitat for an increased population of existing fish species, provide habitat for new species of fish currently not present, provide more open water areas for waterfowl and other water-dependent fauna, and improve access by fish and waterfowl to areas that are presently sparsely inhabited.

e. Future management of the area resulting from the preferred action will allow approximately 1,440 acres of land, west of the proposed Channel 4 dike, to be flooded. Water will be placed on the area by pumping from the Maquoketa or Mississippi Rivers by diverting water from the Maquoketa River, or by both methods. Approximately 3 feet of additional water depth will be placed on the area starting August 15 of each year. The water will then be allowed to drain from the area after December 15 of each year.

Moist soil management on the area is dependent largely on natural succession and early summer water levels on the area. Approximately 200 to 300 acres will be cultivated and seeded to winter wheat in mid-summer. When conditions permit, 10 to 100 acres of millet will be aerial seeded on exposed mudflats. Other artificial techniques will be explored, but are limited by Mississippi River stages and flooding frequency.

The primary impacts resulting from management will be that about 240 acres of bottomland timber (cottonwood, silver maple, box elder) will be flooded annually. Eventually this timber will probably die. From August 15 to December 15 each year 1,440 acres of wetland (palustrine, emergent, artificially flooded) will be created. Management over the long term is expected to retard woody invasion on the flooded area in favor of more aquatic/emergent plant communities. The area to the east of the Channel 4 dike (1,017 acres) will not be affected, except by seepage through the Channel 4 dike.

3. Water Quality

Construction of the dikes, water control structures, public use facilities and dredging of the boat channels will temporarily degrade water quality on the area. These impacts should be insignificant because the work will be done at low water levels.

This project has been designed to allow for the diversion of the Mooney Hollow drainage into the Maquoketa River instead of onto the project area. This watershed does carry heavy silt loads, particularly during periods of high rainfall, which presently are deposited into the Fish Lake backwaters. Diversion of the Mooney Hollow drainage will result in reduced sedimentation and improved water quality in Fish Lake.

Discharges of dredged or fill material into wetland areas require processing of an individual Department of the Army permit. The Iowa DNR previously applied for an individual permit and a public notice was issued on October 15, 1987. The Iowa DNR withdrew their application pending public review of this environmental assessment. The application will be reinstated at the applicant's request.

Section 401 Water Quality Certification has been obtained by the Iowa DNR, a copy of which is included in Appendix A.

4. Terrestrial Habitat

Water level management capabilities resulting from the proposed action will allow the DNR to inundate about 1,190 acres of terrestrial habitat with an average of 2 to 3 feet of water. The terrestrial habitat which will be impacted is

about 240 acres of bottomland timber, 35 acres of cropland and about 915 acres of herbaceous vegetation. In all probability, most of the timber will eventually die as a result of water level management. This timber will continue to provide roosting areas and nest sites for several species until it falls over. Because of the large acreage of timber in the immediate vicinity of the project area, impacts are not expected to be significant.

The vegetative composition on the remainder of the impacted area will be enhanced through management to benefit waterfowl. Those areas currently being cropped will continue to produce corn and winter wheat as food sources. Moist soil management practices, which encourage the growth of annual weeds, forbs, and domestic food sources, will be implemented where feasible. Habitat conditions for waterfowl will improve significantly as a result of the proposed action.

5. Air Quality

Machinery emissions during construction will be temporary. Air quality will not be affected significantly.

6. Endangered Species

Bald eagles are present on the Green Island Area during the winter months. The birds are generally scattered throughout the area and do not appear to prefer any particular site for roosting or feeding. Enhancement of the area for waterfowl is also expected to increase its attractiveness for eagles. Based on this evaluation, the project will have no effect on bald eagles.

State listed species using the area include river otters (threatened) and the red shouldered hawk (endangered). River otters are attracted to the backwater areas on the site. Since the project will enhance wetland habitat on the area, impacts to the river otter will be beneficial.

The possibility exists that the red shouldered hawk may still be a nesting species on the project area. Considering the favorable habitat conditions and the potential impacts of the construction activities associated with the proposed action, mitigative measures may be in order. A survey will be performed by DNR personnel in early March to determine the presence of the species on the area.

If a nest is located, construction activity within 400 meters of the nesting site will be halted during the period of March 15 to June 15. This measure is considered necessary and adequate to avoid any negative impact to the species.

7. Cultural Resources

The DNR contracted with the Office of the State Archaeologist to survey the project site. Archival and literature search of the Iowa Site File all showed no previously reported cultural resources in the project area. The archaeological team conducted a surface survey, shovel testing, soil coring and backhoe trenching in the borrow areas and the proposed dike construction areas. One archaeological site (13JK107) was found during the survey, but due to the limited nature and amount of cultural material present, the site does not appear to be eligible for inclusion on the National Register of Historic Places. As a result of this survey, no further cultural resource investigations are recommended for the project area. SHPO concurrence of these findings was received by the Iowa DNR in a letter dated December 21, 1987. A copy of this letter is included in Appendix A.

VI. ENVIRONMENTAL IMPACTS OF NONPREFERRED ALTERNATIVES

A. No Action

Without the project there is very little opportunity to enhance and improve waterfowl habitat on the area. Upland, terrestrial areas could eventually revert to forest if nothing is done to retard natural succession. The Fish Lake backwaters would continue to receive sediment from the Mooney Hollow watershed during periods of heavy rainfall. Over a long period of time, these wetlands would eventually succeed to terrestrial habitat. Water level management throughout the area would be dependent upon rainfall and Mississippi River elevations. Wildlife populations using the area, particularly waterfowl, would fluctuate depending on habitat conditions.

Recreational activity on the area would remain essentially the same with some annual fluctuations experienced dependent upon habitat conditions. Eventually, recreational use would diminish as the marsh succeeded to forested floodplain. Fishing success in Fish Lake would be reduced as a result of siltation. Boat travel would be limited to the deeper backwater areas not affected by siltation.

B. Expose Water Table

The creation of wetland habitat by constructing potholes and level ditches would be the least economically desirable of all the alternatives. Removal of spoil material and borrow would be expensive and require that suitable spoil disposal sites be located near the project area. Disposal of spoil material on the project area would negatively impact existing wetlands and terrestrial habitats. Maintenance costs would probably be greater because these developments are considered unstable and have a shorter life expectancy than the proposed action. Habitat management capabilities are not as effective because water level control is not available.

Recreational use of the area would be largely walk-in access unless efforts are made to connect potholes with channels or level ditches

thereby permitting some type of boat access. Recreational use of the area would be greater than the No Action alternative but less than the other alternatives. Generally, potholes are considered to pose more of a safety hazard to hunters because of radical changes in water depth, particularly if explosive charges are used during development.

C. Pumping Without Development

Like the preferred action, this alternative also would create about 2,460 acres of wetland habitat on the area. Two types of wetland would be created because of topographical differences. The land located east of the Channel 4 dike is 2 to 3 feet lower than the land located west of the Channel 4 dike. Implementation of this alternative would create 1,020 acres of wetland about 4 to 12 feet deep east of the Channel 4 dike and 1,440 acres of wetland 2 to 3 foot deep on the west side of this dike. The western segment could be managed to provide excellent habitat conditions; however, the eastern segment would be too deep and would eventually retard hemi-marsh conditions (60:40 vegetation to water ratio). This alternative would require that large volumes of water be pumped into the area over a longer period of time. Water seepage through the Mississippi River boundary levee in the eastern segment would be increased due to high water levels on the interior slopes of the levee. Damage to the levee from wave action would increase as the eastern segment became an open water impoundment.

Hunting opportunity and hunter use would increase on the western segment, but would probably decrease on the eastern segment after this area became an open water habitat. Boating access and boater use of the eastern segment would be improved because of increased water depth over a larger area. Fishing opportunity would not be expected to change. The pumping operation would improve fisheries habitat by supplying oxygenated water and increasing water depth. This impact would be temporary because increased water depths are allowed for only 3 months out of the year.

D. Subdivision of Proposed Impoundment

This alternative is considered to be desirable because it provides the greatest water level management control and the most reliable marsh conditions. The impacts of this alternative are very similar to the preferred action but to a greater degree. Waterfowl and recreational use of the area would both be expected to increase. The acres of wetland habitat created would be about the same as in the preferred alternative. The impacts associated with construction activities would increase because of additional development. Insufficient funding is the primary reason that this alternative was not selected as the preferred action. It will be possible to construct the cross dikes identified in this alternative at a future time after completion of the preferred action.

VII. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

Ten acres of wetland will be filled and 15 acres of bottomland forest will be cleared as a result of construction activities. As much as 240 acres of

bottomland timber may eventually be killed as a result of the water level management program planned for the area. Temporary increases in turbidity during channel dredging are also unavoidable.

VIII. RELATIONSHIP BETWEEN SHORT-TERM USE OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The purpose of this project is to enhance existing wetland habitats and create additional wetland acreage on the Green Island Wildlife Area. As a result of the project, both short-term and long-term productivity of the area as a wetland habitat will increase. The short-term productivity of forest land and terrestrial habitats will be sacrificed in exchange for long- term wetland habitat values. The effects of water level management as a result of the proposed action will have an immediate beneficial impact on waterfowl and other wetland wildlife species.

IX. ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES WHICH WOULD BE INVOLVED IF THE PROPOSED PROJECT WERE IMPLEMENTED

Fifteen acres of bottomland timber will be cleared and 10 acres of wetland will be filled as a result of construction activities. These impacts, in addition to the commitment of funds, labor and construction materials, are considered to be irreversible and irretrievable. Unless future management practices are altered, the loss of 240 acres of bottomland timber will also be irreversible and irretrievable.

X. RELATIONSHIP OF THE PROPOSED PROJECT TO LAND-USE PLANS

The present land use of the project area is for wildlife management purposes. This project is compatible with this land use and is designed to enhance and promote these land-use plans.

XI. COMPLIANCE WITH ENVIRONMENTAL QUALITY STATUTES

The proposed project complies with 11 applicable regulations listed in table 4.

XII. COORDINATION

A master plan for this project was completed in 1979. Throughout the master planning process, public meetings were conducted to solicit comments and to inform other agencies and the public of the proposed action. As a result of these master planning efforts, a cooperative agreement was signed between the DNR and the Green Island Levee and Drainage District for the purpose of defining construction, maintenance and management responsibilities on the Green Island Wildlife Area. The purpose of this agreement is to allow the DNR to manage the Green Island Area without adversely affecting adjacent, privately owned agricultural lands.

TABLE 4

Compliance of the Preferred Plan with WRC-Designated Environmental Statutes

Federal Policies	Compliance
Archaeological and Historic Preservation Act, 16 U.S.C. 469, et seq.	Full compliance
Clean Air Act, as amended, 42 U.S.C. 1857h-7, et seq.	Full compliance
Clean Water Act (Federal Water Pollution Control Act) 33 U.S.C. 1251, et seq.	Full compliance
Coastal Zone Management Act, 16 U.S.C. 1451, et seq.	Not applicable
Endangered Species Act, 16 U.S.C. 1531, et seq.	Full compliance
Estuary Protection Act, 16 U.S.C. 1221, et seq.	Not applicable
Federal Water Project Recreation Act, 15 U.S.C. 460-1(12), et seq.	Full compliance
Fish and Wildlife Coordination Act, 16 U.S.C. 601, et seq.	Full compliance
Land and Water Conservation Fund Act, 16 U.S.C. 1401, et seq.	Full compliance
Marine Protection Research and Sanctuary Act, 33 U.S.C. 1401, et seq.	Not applicable
National Environmental Policy Act, 42 U.S.C. 4321, et seq.	Full compliance
National Historic Preservation Act, 16 U.S.C. 470a, et seq.	Full compliance
Rivers and Harbors Act, 33 U.S.C. 403, et seq.	Full compliance
Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001, et seq.	Full compliance
Wild and Scenic Rivers Act, 16 U.S.C. 1271. et seq.	Not applicable

Other agencies that have been involved during project planning and design include the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Iowa Department of Cultural Affairs, Jackson County Board of Supervisors, Green Island Levee and Drainage District No. #1, and the Iowa DNR.

State Section 401 certification has been granted by the Environmental Protection Division, DNR. The need for a floodplain construction permit has been waived by this same agency. Copies of pertinent correspondence are included.

The results of the cultural investigation conducted by an archaeological consultant have been discussed with the Iowa SHPO. By letter dated December 21, 1987, the SHPO recommended project approval.

The U.S. Fish and Wildlife Service concurs with the assessment's conclusion that the project will not effect any Federally listed threatened or endangered species, and that the developments will benefit the National Migratory Bird Management program. A copy of their comments is included in Appendix A.

FINDING OF NO SIGNIFICANT IMPACT

GREEN ISLAND WILDLIFE AREA HABITAT DEVELOPMENT
AND ENHANCEMENT
UPPER MISSISSIPPI RIVER POOL 15
JACKSON COUNTY, IOWA

Having reviewed the information contained in this environmental assessment, I find that construction of the Green Island Wildlife Area Habitat Development and Enhancement Plan will have no significant adverse effects on the environment. This project is not a major Federal action and therefore preparation of an Environmental Impact Statement (EIS) is not required. This determination may be reevaluated if warranted by later developments.

Factors that were considered in making the determination that an EIS is not required were:

a. Construction of the proposed Green Island Development will result in greatly improved management capability for 2,590 acres of wildlife habitat.

b. The project will provide improved recreational facilities and opportunities for the general public.

c. The filling of 10 acres of wetland and loss of 15 acres of bottomland forest will be more than compensated by the overall habitat improvement.

d. No private farmlands or other property will be affected.

e. The public review of this EA has not resulted in any significant adverse comments.

_____
Date

Neil A. Smart
Colonel, U.S. Army
District Engineer

APPENDIX A

CORRESPONDENCE

DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING
ROCK ISLAND, ILLINOIS 61201

REPLY TO ATTENTION OF:
NCRED-PB

: OCT 1979

Mr. Dean Dalziel
District Wildlife Supervisor
District II Headquarters
R.R. 2, Box 269
Manchester, Iowa 52057

Dear Mr. Dalziel:

We have reviewed the "Green Island Wildlife Area Development Plan" and provide the following comments:

a. The plan is well written.

b. The plan, oriented primarily toward game species, needs to address non-game species more thoroughly.

(1) Bald Eagles have been recorded on the Green Island Wildlife Area and have historically nested directly across the Mississippi River from the Green Island Wildlife Area. Bald Eagle use of the wildlife area should be documented and management practices adjusted to consider this species. Large trees may be girdled and left standing for Bald Eagle feeding perches, rather than selectively cut.

(2) Thompson and Landin (1978, "An Aerial Survey of Waterbird Colonies Along the Upper Mississippi River and Their Relationship to Dredged Material Deposits," US Army Waterways Experiment Station Technical Report D-78-13) reports the presence of Great Blue Heron and Great Egret nesting colonies at river miles 554.0, 552.0 and 538.8. The close proximity of Green Island Wildlife Area (546.0-549.0) to these heronries indicates that the locality may be an important feeding area for Great Blue Herons and Great Egrets. Since these species have had substantial declines, the Management Plan should consider them, especially during the breeding season, March to August. Establishment of refuge areas should be considered to reduce disturbances to feeding Great Egrets and Great Blue Herons during the breeding season.

3 OCT 1979

NCRED-PB
Mr. Dean Dalziel

(3) Over-harvesting of American Ginseng (which is found in the Wildlife Area) is becoming an increasing problem (Inclosures1 and 2). Since Ginseng is becoming very valuable, harvest should be controlled in the Wildlife Area to prevent over exploitation.

(4) The Fat Pocketbook Mussel (Proptera onpax), a federally endangered species, potentially could be present on the Green Island Wildlife Area. Since Fat Pocketbooks are associated with backwater areas of the Mississippi River, management practices which involve altering aquatic habitat should consider the potential presence of this species.

c. The Osprey is not on the US Department of Interior's Rare and Endangered List as stated in paragraph 3, page 10 of the plan.

d. The River Otter is on the State of Iowa's List of Endangered Mammals but not on US Department of Interior's Rare and Endangered List. This should be noted in the text on page 10, paragraph 3.

e. Page 23, the procedures and decision making process for altering the refuge location and boundaries need to be clarified in the text.

Generally, the plan is thorough and individuals responsible for its preparation should be commended, but management of the area for non-game species should be addressed in the development plan in greater depth.

Thank you for the opportunity to comment on the development plan.

Sincerely,

for DOYLE W. McCULLY, P.E.
Chief, Engineering Division

2 Incl
1. Exerpt from Endangered Species Technical Bulletin, July 1979 Vol. VI

2. Exerpt from Missouri Conservationist, August 1979

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

September 2, 1987

Allen L. Farris
Fish and Wildlife Division
Iowa Dept. of Natural Resources
L O C A L

SUBJECT: Green Island Wildlife Management Improvements

Dear Al:

The proposed Green Island Wildlife Management area improvements have been reviewed by our Flood Plain staff. Most of the work will involve dredging and spoil placement within the Green Island Levee District for boat channels, dike construction, drainage and environmental enhancement. In addition, parking lots, boat ramps, culverts and water control structures will be constructed to develop this wildlife area for public use.

The Green Island Wildlife Management area is located in a rural area on the flood plain of the Mississippi River which has very little upland drainage area (less than 10 square miles). The excavation work is more than 100 feet from the bank of the Mississippi and all spoil placement (dike construction) will have no effect on Mississippi River flood flows due to the higher Green Island Levee.

Since the project does not exceed flood plain approval thresholds, no permit will be required. Thank you for your cooperation and the opportunity to review the project.

Sincerely,

JACK D. RIESSEN, P.E.
SUPERVISOR
FLOOD PLAIN PERMITS SECTION

JDR/mjt/M245MJT.5

cc: Scott Cline, DNR

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

September 15, 1987

Larry J. Wilson, Director
Iowa Department of Natural Resources
Wallace Building
LOCAL

SUBJECT: Request for State Section 401 Certification

Green Island Wildlife Management Area Habitat Enhancement Project
Upper Mississippi River Mile #547
Sections 6, 7, 16 and 21, T85N, R6E, Jackson County, Iowa
Water Quality Designation: Class A & B(w), high quality resource water. Classes "A" & "B" waters are to be protected for wildlife, fish, aquatic, and semiaquatic life and primary contact water uses. High quality resource waters are to be protected for their existing physical and biological integrity.

Dear Mr. Wilson:

This Department has received and reviewed the request for State certification pursuant to Section 401 of the Clean Water Act. State Section 401 certification is required for the issuance of the Corps of Engineers Section 404 permit. Section 401 certification is this Department's concurrence that this project is consistent with Iowa's Water Quality Standards.

This letter certifies, subject to the following condition, that this Department has determined that there is reasonable assurance the proposed activity will be conducted in a manner which will not violate water quality standards of the State of Iowa. A flood plain construction permit is necessary for this project. This application is under review. A Chapter 111.4 construction permit application has been reviewed and approved internally.

Condition:

> The project will have permanent adverse impact on about 14 acres of existing riparian wetland because of boat channel construction and spoiling on dikes. 23 acres of presently cultivated land shall be converted into permanent wetland through excavation and creation of drainage and environmental channels and outlets. This work shall serve as mitigation for the lost wetland acreage.

A copy of this letter is being forwarded to the District Corps of Engineers office for their information and use.

Sincerely,

Keith Bridson

KEITH BRIDSON, P.E.
SUPERVISOR
WATER QUALITY PLANNING SECTION

KB:MA:pla/DES

cc: Neil A. Smart, District Engineer, Rock Island, IL
Darrell Hayes, DNR, LOCAL
David Claman, DNR, LOCAL

JACKSON COUNTY ENGINEER

STEVE DE VRIES
319-652-4782

JACKSON COUNTY COURTHOUSE, 201 WEST PLATT, MAQUOKETA, IOWA 52060

October 19, 1987

Mr. Scott Cline
IDNR
Wallace State Office Bldg.
Des Moines, IA 50300

Ref: Green Island refuge project
No. WI 80017

Dear Scott:

We have reviewed the preliminary plans you sent us for the Green Island project. No County permits or driveway applications will be needed. We appreciate having the opportunity to check things over well in advance of the construction phase.

As part of our review, we did notify the Green Island drainage district of the project and showed them the plans. It looks like they will have specific comments and criticisms of the design. They will either notify you firectly or may communicate via the Board of Supervisors.

Yours very truly,

Steve De Vries

Steve De Vries
County Engineer

JACKSON COUNTY

BOARD OF SUPERVISORS
319/652-3181

Richard E. Dickinson

Patrick W. O'Rourke

Barbara A. Wright

JACKSON COUNTY COURTHOUSE, 201 WEST PLATT, MAQUOKETA, IOWA 52060

October 30, 1987

Mr. James H. Blanchar, P.E.
Acting Chief, Operations Division
U.S. Army Corps of Engineers
Clock Tower Building
Rock Island, Illinois 61204-2004

RE: Public Notice CENCR-158290

Dear Mr. Blanchar:

The Jackson County Board of Supervisors has reviewed the above referenced public notice and requests a public hearing on the proposed project.

Our board is very concerned with the design of the 3 water control tubes proposed for the Maquoketa River levee. In particular, we are most concerned with the rubber check valves which are to be installed to prevent flood waters from backflowing through the water control tubes. The caps could possibly become blocked with debris, chewed by beavers, torn by ice flows or perhaps frozen open in the winter allowing water from the Mississippi to run into the Maquoketa River during spring runoff.

We would be in favor of a stem gate back-up for the rubber caps. The gates could be closed in the winter months to prevent backflow and in the event the rubber caps were damaged or vandalized in the summer months.

Another concern which our board would like to have addressed is the future funding of repairs to the Maquoketa River levee. We are concerned that the Green Island Drainage District will be held accountable for future repairs in the event of a levee blowout due to leaking tubes or inadequate installation of the tubes by the Corps of Engineers and the Iowa Department of Natural Resources. This question of liability for repairs needs to be clarified before construction work begins on the levee.

For these reasons, the Jackson County Board of Supervisors requests a public hearing on the project at the Green Island Wildlife Management Area (ref. CENCR-158290). We would ask to hold the hearing at the

Jackson County Courthouse with representatives from both the Army Corps of Engineers and the Iowa Department of Natural Resources present.

Thank you for your consideration of this request. Please feel free to contact our office if you have any questions.

Sincerely,

Barbara A. Wright, Chair
Jackson County Board of Supervisors
(319) 652-2100

cc: Bob Sheets
Jon Andresen
Dean Dalziel

File: Green Island Area
Maquoketa Unit

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

December 8, 1987

Ms. Barbara A. Wright, Chair
Jackson County Board of Supervisors
Jackson County Courthouse
201 West Platt
Maquoketa, Iowa 52060

Dear Ms. Wright:

The U.S. Army Corps of Engineers has forwarded your letter of October 30, 1987, to the Iowa Department of Natural Resources for response. Your letter identifies two very valid concerns with respect to our proposed development of the Green Island Wildlife Area. We too have recognized these concerns and have changed our plans accordingly. This letter and the attached engineering plans are intended to inform you of these changes.

The three water control tubes proposed for the Maquoketa River levee will be located in that portion of the levee which is maintained by the DNR (see Article 12 - Cooperative Agreement dated 10-8-80). As a result, the DNR will be responsible for all repairs regardless of whether they result from a blowout due to leaking tubes, or simply routine maintenance. I should add that our Engineering Bureau is requiring that certain precautions be taken by the Contractor during placement of these tubes. One precaution is that the work be timed so that it is done during periods of low flow in the Maquoketa and Mississippi Rivers. The Contractor will also be required to have all materials at the site prior to construction. These precautions should ensure that the work is performed quickly and under good working conditions, so that future maintenance is avoided or at least minimized.

The three water control tubes have been designed to include the back-up gates as suggested in your letter. Two of the three tubes will still be installed with the rubber check valves. The other tube will not have a check valve so that the refuge area could be flooded if Maquoketa River water levels are high enough. All three tubes will have risers installed which include "Waterman" canal gates. In addition, stoplog channel iron will be placed in all three risers so that stoplogs can be used to stop water flows in case the gates should fail, or require repair. These features are shown in detail on the attached plans.

It is obvious that the Jackson County Board of Supervisors and the DNR share the same concerns for this project. Your letter has served to reinforce our plans concerning the design of the three tubes. We also feel that the existing Cooperative Agreement adequately addresses maintenance since these tubes will be located in that portion of the levee which we maintain.

Feel free to contact me if you still wish to request a public hearing, or if you have other questions about the proposed development. My phone number in Des Moines is 515/281-6156.

Sincerely,

Richard A. Bishop

RICHARD A. BISHOP, CHIEF
WILDLIFE BUREAU

RAB:JJ:L024.rlt

Attachments

cc: James Blanchar, COE
John Betker, COE
Dean Dalziel, DNR
Bob Sheets, DNR

The University of Iowa
Iowa City, Iowa 52242

Office of the State Archaeologist
Eastlawn

(319) 335-2389

December 11, 1987

Mr. Jeff Joens
Department of Natural Resources
Wallace State Office Building
Des Moines, Iowa 50319

Dear Mr. Joens:

We have completed the field phase of our investigation of the Green Island borrow areas in Jackson County. This letter constitutes a progress report to assist in your environmental impact documentation.

Archival and literature research and examination of the Iowa Site File in the Office of the State Archaeologist all showed no previously-reported cultural resources in the project area. The archaeological team conducted surface survey, shovel testing, soil coring, and backhoe trenching in the borrow areas and the proposed road construction area. Much of the project area was found to have been previously disturbed. Archaeological site 13JK107 was found during the survey. It is situated near the edge of a proposed borrow pit. This prehistoric site of unknown cultural affiliation is characterized by a small, thin scatter of chert flakes with no evidence of other cultural materials or associated features. Due to the limited nature and amount of cultural material present, it appears unlikely that significant archaeological remains exist at 13JK107. Therefore, the site does not appear to be eligible for inclusion on the National Register of Historic Places. No further cultural resource investigations are recommended for the project area.

Inasmuch as no survey technique is totally adequate to locate all cultural resources in a given vicinity, should any such materials be encountered during construction, the Office of the State Archaeologist should be notified immediately.

A complete report on the survey of the Green Island project area will be sent to you by January 15, 1988, and a copy will be sent directly to the Bureau of Historic Preservation. In the meantime, please feel free to contact me if you have any questions or need more information on this subject.

Sincerely,

William Green

William Green, Ph.D.
Research Archaeologist

WG/s

State Historical Society of Iowa

The Historical Division of the Department of Cultural Affairs

December 21, 1987

James H. Blanchar, P.E.
Acting Chief, Operations Division
Rock Island Corps of Engineers
Clock Tower Building
P. O. Box 2004
Rock Island, IL 61204-2004

RE: COE - JACKSON COUNTY - GREEN ISLAND WMA- BOAT RAMP AND PARKING LOT: CENCR-OD-S-070-0X6-1-158290

Dear Mr. Blanchar:

Based on the information you provided, we find that there are no historic properties which might be affected by the proposed undertaking. Therefore, we recommend project approval.

However, if the proposed project work uncovers an item or items which might be of archeological, historical or architectural interest, or if important new archeological, historical or architectural data come to light in the project area, you should make reasonable efforts to avoid or minimize harm to the property until the significance of the discovery can be determined.

Should you have any questions or if the office can be of further assistance to you, please contact Review & Compliance program at 515-281-8743.

Sincerely,

Kay Simpson
Review & Compliance Program
Bureau of Historic Preservation

/mtm

cc Dudley M. Hanson, P.E.
Scott Klein
Don Criswell
Jeff Joens, DNR

☐ 402 Iowa Avenue
Iowa City, Iowa 52240
(319) 335-3916

☑ Capitol Complex
Des Moines, Iowa 50319
(515) 281-5111

☐ Montauk
Box 372
Clermont, Iowa 52135
(319) 423-7173

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ROCK ISLAND FIELD OFFICE (ES)
1830 Second Avenue, Second Floor
Rock Island, Illinois 61201

IN REPLY REFER TO:
COM: 309/793-5800
FTS: 386-5800

April 11, 1988

Colonel Neil A. Smart
District Engineer
U.S. Army Engineer District
Rock Island
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Smart:

We have reviewed the environmental assessment for the Green Island Development Project dated January 25, 1988, prepared by the Iowa Department of Natural Resources (Department). The comments below have been coordinated with our Division of Refuges and Wildlife.

The assessment accurately describes the environmental effects of the proposed action. We concur with the assessment's conclusion that the project will have no effect on Federally listed threatened or endangered species, and that the developments will provide benefits to the National Migratory Bird Management program.

These comments are provided under the authority of the Fish and Wildlife Coordination Act of 1958 and the Endangered Species Act of 1973, as amended.

Sincerely,

for Richard C. Nelson
Field Supervisor

cc: AWR-RF2
AE-REC

A

P

P

E

N

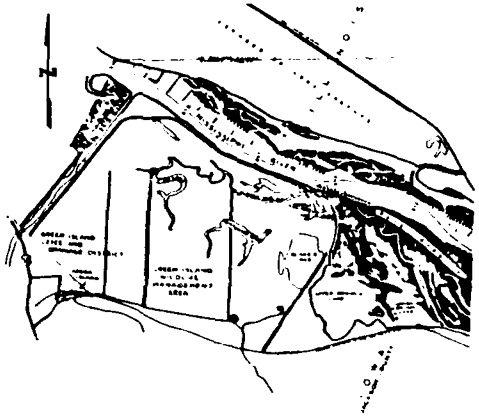
PLAN SHEETS (1-19),
CONSTRUCTION PLANS FOR PREFERRED ACTION

D

I

X

B



VICINITY MAP

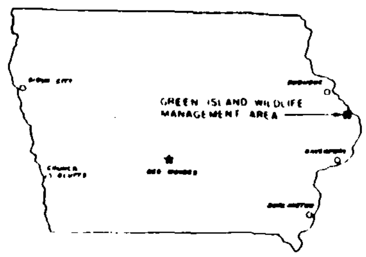
IOWA DEPARTMENT OF NATURAL RESOURCES

CONSTRUCTION PLANS FOR

GREEN ISLAND WILDLIFE MANAGEMENT AREA

JACKSON COUNTY

DIKES, CHANNELS, BOAT RAMPS, PARKING LOTS, AND WATER CONTROL STRUCTURES



KEY MAP

ESTIMATE OF QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITIES
1	CLEARING AND GRUBBING	18.7 AC
2	SEEDING AND FERTILIZING, MIXTURE "A"	57.5 AC
3	EXCAVATION, CLASS 10, ROADWAY AND BORROW	273,100 CU YD
4	EXCAVATION, CHANNEL	153,700 CU YD
5	CONCRETE, BOAT RAMP	88.7 SQ YD
6	STRUCTURAL CONCRETE	53.3 CU YD
7	STONE REVETMENT, CLASS "D"	3,440 TONS
8	GRANULAR SURFACING, CLASS "A" CRUSHED STONE	11,360 TONS
9	HANDRAIL	56 LIN FT
10	STEEL SHEET PILING	840 SQ FT
11	PREFABRICATED BRIDGE, 25 X 10 WIDE	1 EACH
12	ENGINEERING FABRIC	24,330 SQ YD
13	3-D DRAINAGE MATTING	700 SQ YD
14	CMP RISER SECTION, 60" DIA	4 EACH
15	CMP RISER WCS 114 07,08,&09 WITH 36" DIA CANAL GATE	3 EACH
16	CMP CULVERT 24" DIA, 16 GA	274 LIN FT
17	CMP CULVERT, 36" DIA, 14 GA, HEL WELDED SEAM	1062 LIN FT
18	CMP CULVERT, 42" DIA, 12 GA	568 LIN FT
19	CMP CULVERT, 48" DIA, 12 GA, HEL WELDED SEAM	98 LIN FT
20	METAL APRONS 24" DIA 16 GA	10 EACH
21	METAL APRONS 36" DIA, 14 GA	15 EACH
22	METAL APRONS, 42" DIA, 12 GA	20 EACH
23	METAL APRONS, 48" DIA, 12 GA	2 EACH
24	CM SEEPAGE DIAPHRAGM, 7 X 7, 14 GA	18 EACH
25	CM SEEPAGE DIAPHRAGM, 8 X 8, 12 GA	2 EACH
26	TIMBER STOP LOGS	130 EACH
27	STREAM GAGE STYLE "E"	4 EACH
28	[illegible] TRIPLE PIPE SUPPORT	1 EACH
29	[illegible] RUBBER CHECK VALVE	2 EACH
30	[illegible] RISER WCS 114 01,02,03, WITH 36" DIA CANAL GATE	3 EACH
31	SEEDING AND FERTILIZING, MIXTURE "B"	73.4 ACRES

PLANS PREPARED BY
BUREAU OF CONSTRUCTION SERVICES
DIVISION OF ADMINISTRATION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

DATE ______ REG. NO. ______

CHIEF ENGINEER	DATE
CHIEF BUREAU OF WILDLIFE	DATE
DIVISION ADMINISTRATOR FISHERIES & WILDLIFE	DATE
DIRECTOR DEPARTMENT OF NATURAL RESOURCES	DATE

INDEX TO DRAWINGS

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PLAN & PROFILES OF DIKES, & CHANNELS	3-6
PLAN OF WCS 114 01 02 & 03	7
PLAN OF WCS 113 02, BRIDGE 111 02, LOT 464 05 & BOAT RAMP 861 03	8
PLAN OF PARKING LOT 464 06 AND CULVERTS 118 06,07,08 & 09	9
PLAN OF PARKING LOT 464 03 WCS 114 04 05 06 & 07, AND CULVERTS 118 12 & 13	10
PLAN OF PARKING LOT 464 02, WCS 114 10, AND BOAT RAMP 861 01	11
BOAT RAMP CONSTRUCTION DETAILS	12
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DETAILS OF WATER CONTROL STRUCTURE 113 02 & BRIDGE 111 02	18,19
THE FOLLOWING INFORMATION IS ALSO AVAILABLE FROM THE DNR PROJECT FILE	
SURVEYS OF EXISTING PARKING LOTS 464 02 & 464 01	20
AERIAL PHOTOGRAPHY OF THE GREEN ISLAND WMA	16 SHEETS
AERIAL TOPOGRAPHY OF THE GREEN ISLAND WMA	18 SHEETS
PLANS OF EXISTING FACILITIES	

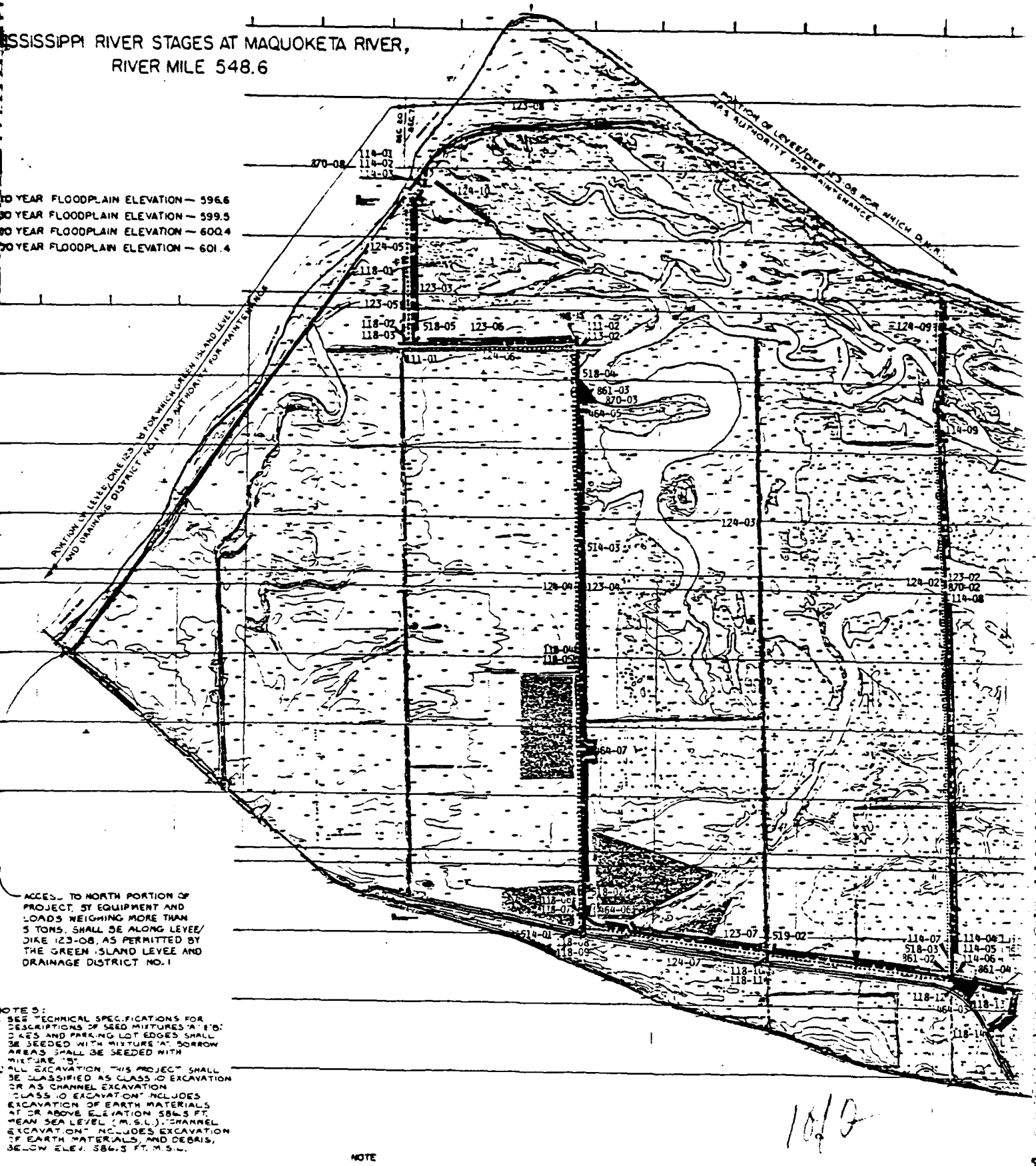
BID LETTING PROJECT NO ______

PROJECT NO. WT 8017 & WT 8706 **Sheet** 1 **of** ___

GREEN ISLAND WMA DIKE, CHANNELS, BOAT RAMPS, LOTS, & WCS

SSISSIPPI RIVER STAGES AT MAQUOKETA RIVER, RIVER MILE 548.6

10 YEAR FLOODPLAIN ELEVATION — 596.6
50 YEAR FLOODPLAIN ELEVATION — 599.5
00 YEAR FLOODPLAIN ELEVATION — 600.4
70 YEAR FLOODPLAIN ELEVATION — 601.4



NOTES:
1. SEE TECHNICAL SPECIFICATIONS FOR DESCRIPTIONS OF SEED MIXTURES 'A' & 'B'. DIKES AND PARKING LOT EDGES SHALL BE SEEDED WITH MIXTURE 'A'. BORROW AREAS SHALL BE SEEDED WITH MIXTURE 'B'.
2. ALL EXCAVATION, THIS PROJECT SHALL BE CLASSIFIED AS CLASS 10 EXCAVATION OR AS CHANNEL EXCAVATION. "CLASS 10 EXCAVATION" INCLUDES EXCAVATION OF EARTH MATERIALS AT OR ABOVE ELEVATION 586.5 FT. MEAN SEA LEVEL (M.S.L.). "CHANNEL EXCAVATION" INCLUDES EXCAVATION OF EARTH MATERIALS, AND DEBRIS, BELOW ELEV. 586.5 FT. M.S.L.

NOTE

THIS MAP HAS BEEN DESIGNED TO MEET NATIONAL MAP ACCURACY STANDARDS AT ITS ORIGINAL BASIC SCALE OF 1:1200 AND CONTOUR INTERVAL OF 1 FEET. MARKHURD'S LIABILITY FOR ANY INACCURACIES FOUND IN THIS MAP SHALL BE LIMITED TO THE CORRECTION OF SUCH INACCURACIES, AND SHALL NOT EXCEED THE CONTRACT VALUE OF THE MAP. IT IS THE RESPONSIBILITY OF THE MAP USER TO ASCERTAIN WHETHER OR NOT THE ABOVE SCALE, CONTOUR INTERVAL AND ACCURACY ARE SATISFACTORY FOR WHATEVER PURPOSE THE MAP IS TO BE USED.

LEGEND

PRIMARY ROAD
SECONDARY ROAD
TRAIL
BRIDGE
RAILROAD
FENCE
BUILDING
WALL
DRAINAGE OR SHORELINE
CULVERT
LAKE OR POND
SWAMP
TREE
WOODED AREA
PHOTO CENTER
APPROXIMATE CONTOURS
FIELD SURVEY ELEVATION
PLOTTED ELEVATION
HORIZONTAL CONTROL POINT
BENCH MARK
SECTION CORNER APPROXIMATE LOCATION
U.S. CORNER APPROXIMATE LOCATION

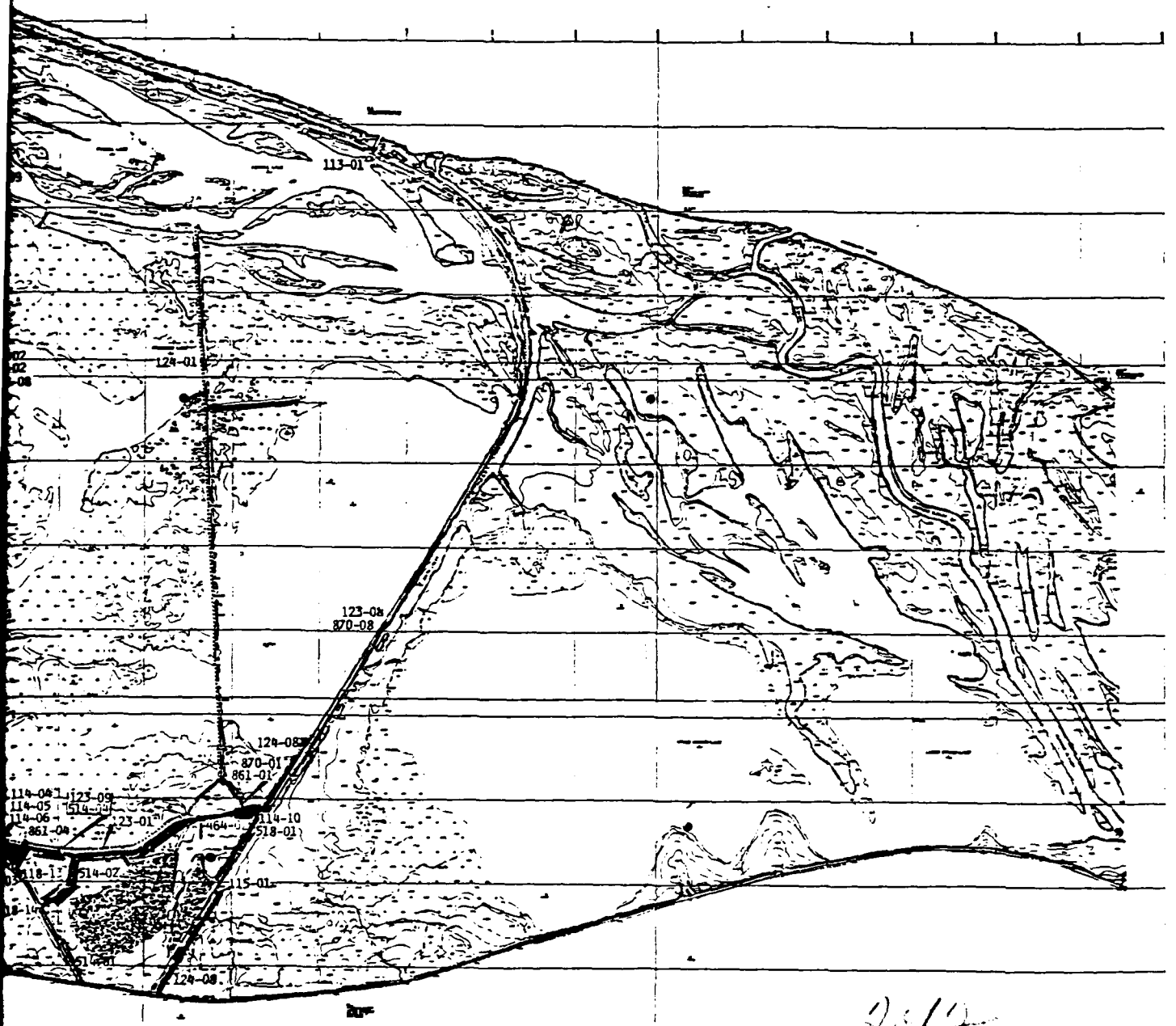
MARKHURD

10/2

LEGEND

— POTENTIAL BORROW SITE
— ENVIRONMENTAL CHANNEL
— PERIMETER DRAINAGE
— BOAT CHANNEL
— DIKE

111-00 — BRIDGE
113-00 — CONCRETE WATER CONTROL STRUCTURE (W.C.S.)
114-00 — WISCONSIN TUBE W.C.S.
115-00 — CONCRETE WATER DIVERSION STRUCTURE
118-00 — CORRUGATED METAL PIPE CULVERT
123-00 — DIKE
124-00 — DITCH OR CHANNEL
464-00 — ROCK SURFACED PARKING LOT
514-00 — ROCK SURFACED ROAD
518-00 — TRAFFIC CONTROL GATE
519-00 — TRAFFIC CONTROL CABLE
861-00 — CONCRETE BOAT RAMP
870-00 — SHORELINE PROTECTION/STONE REVETMENT



SCALE: 1"=800'
0 400 800 1200 1600 2000 FEET
CONTOUR INTERVAL: 2 FEET
TOPOGRAPHY BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS TAKEN IN NOVEMBER, 1980.
IOWA STATE GRID, NORTH ZONE, SHOWN AT 1000 FOOT INTERVALS.
VERTICAL DATUM IS MEAN SEA LEVEL.

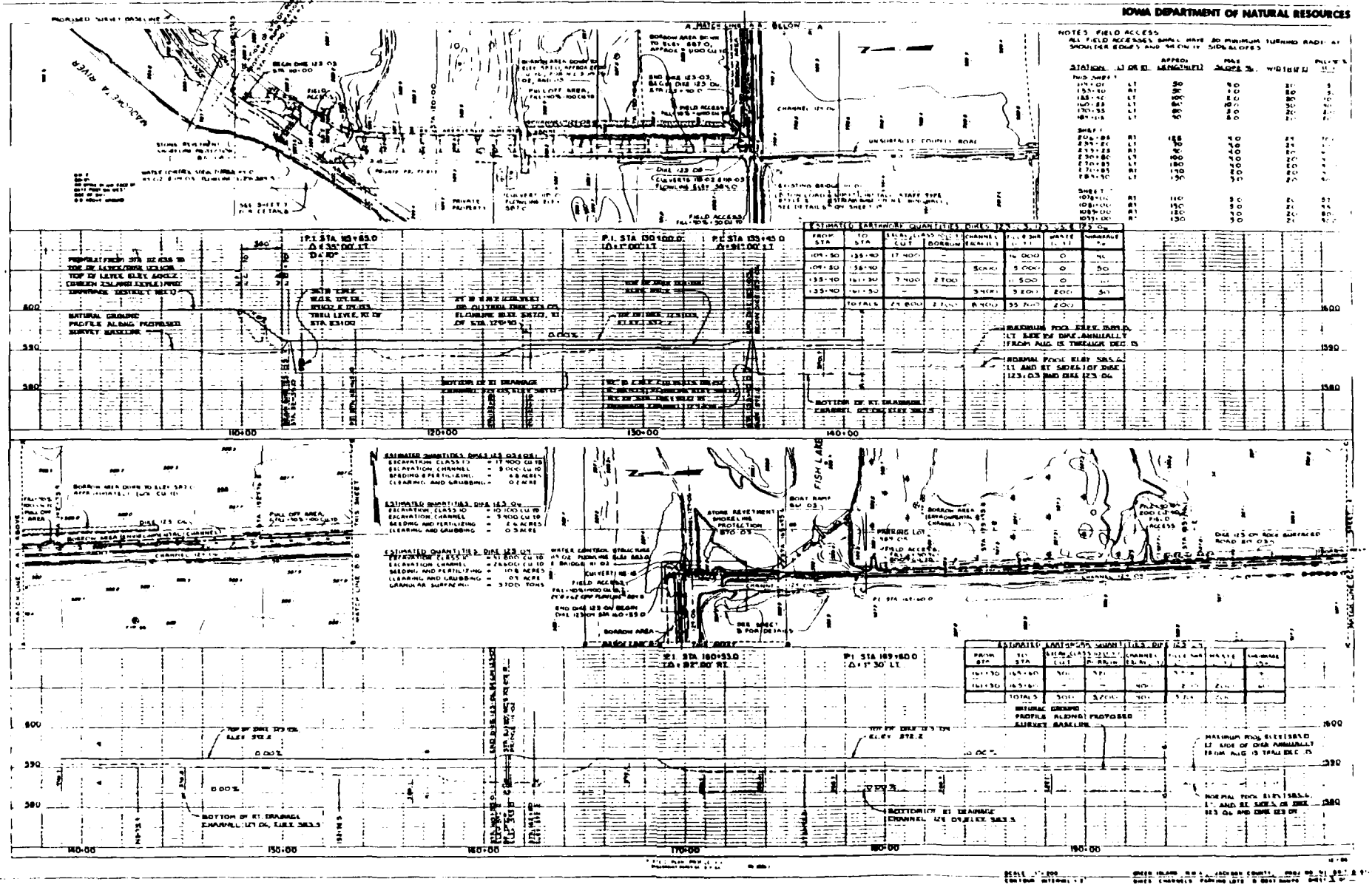
GENERAL PLAN OF GREEN ISLAND WILDLIFE AREA

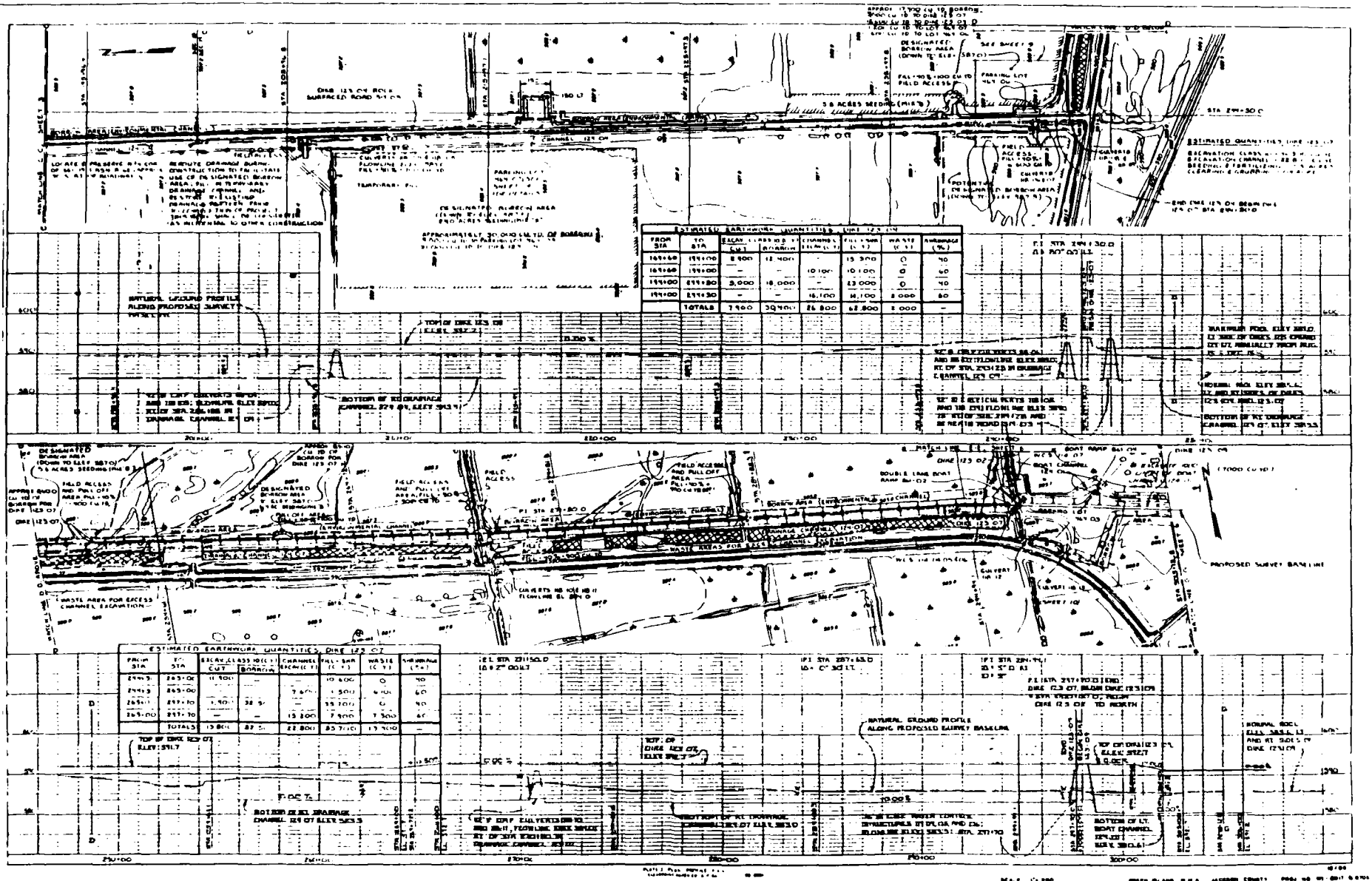
JACKSON COUNTY

DIKES, CHANNELS, BOAT RAMPS, PARKING LOTS, AND WATER CONTROL STRUCTURES

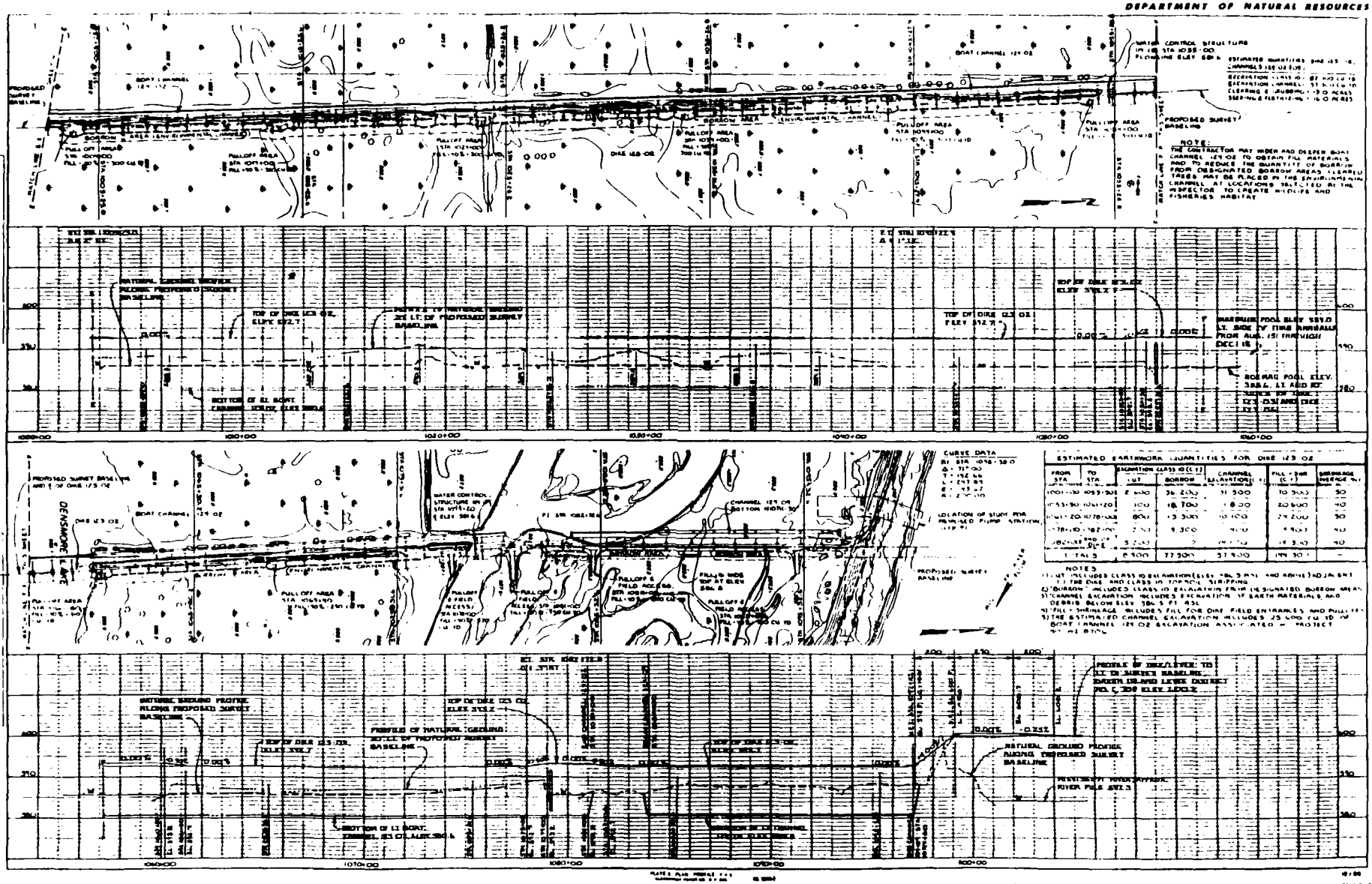
PROJECT NO. WI 8017 & WI 8706 SHEET 2 OF ___

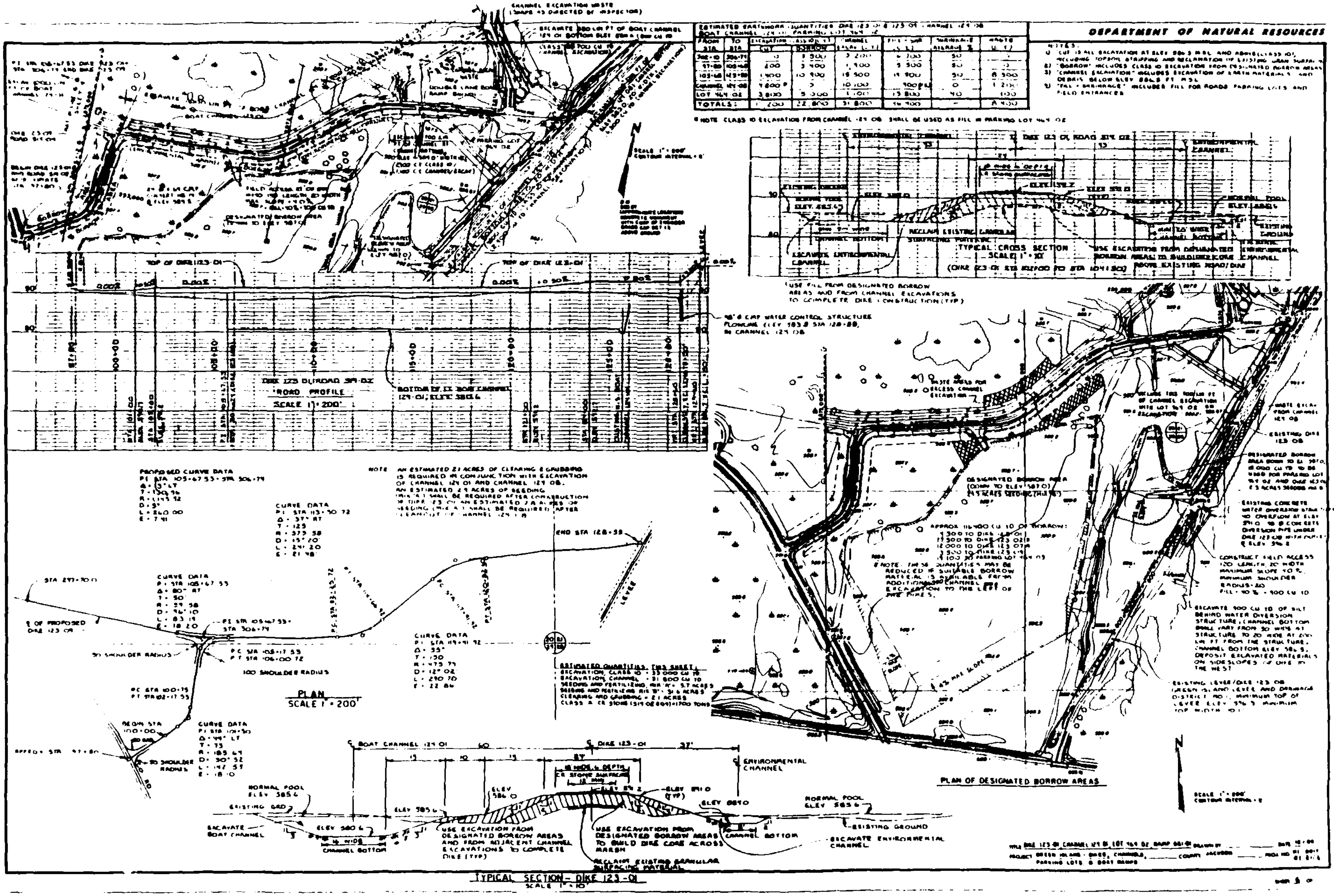
IOWA DEPARTMENT OF NATURAL RESOURCES

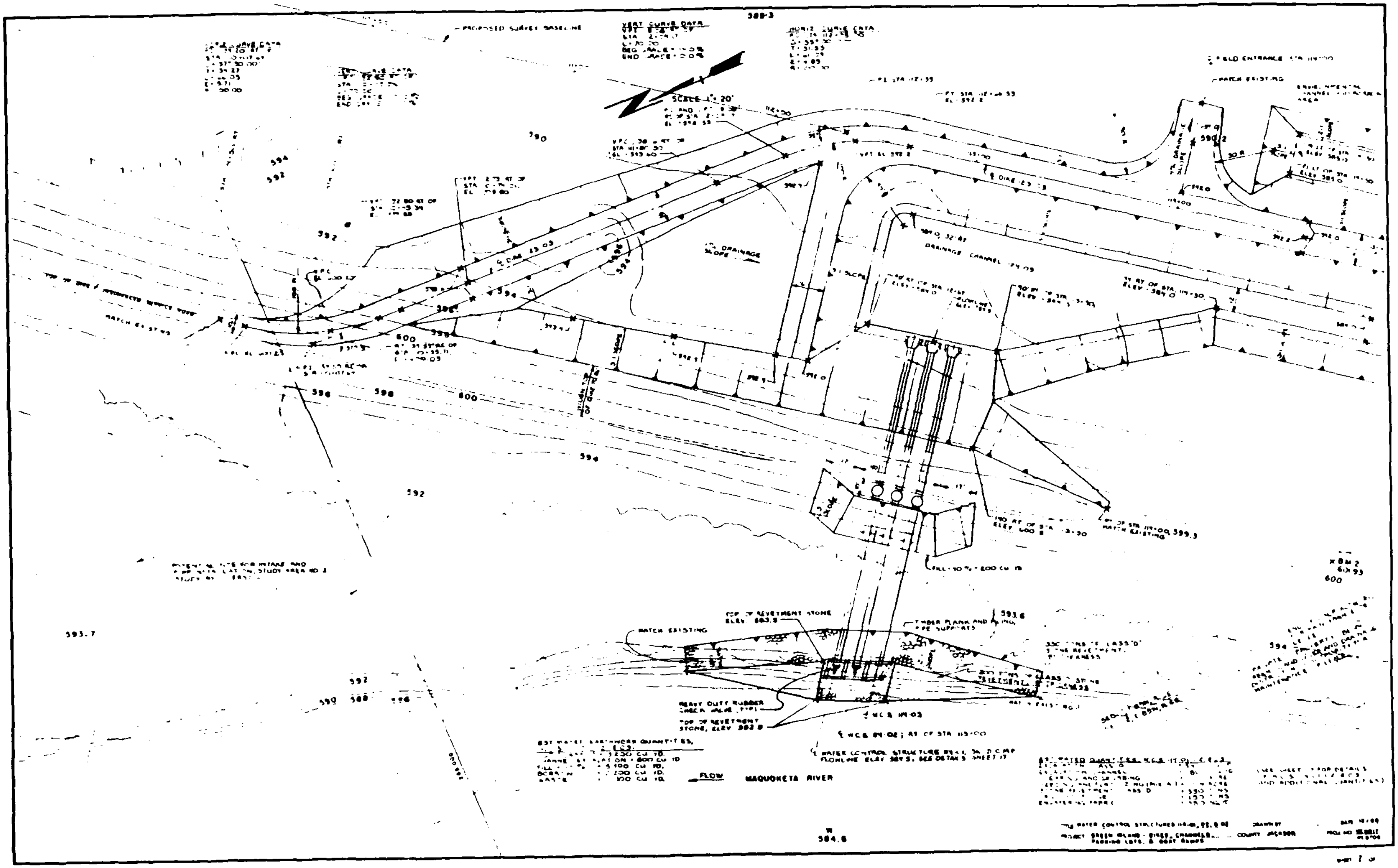


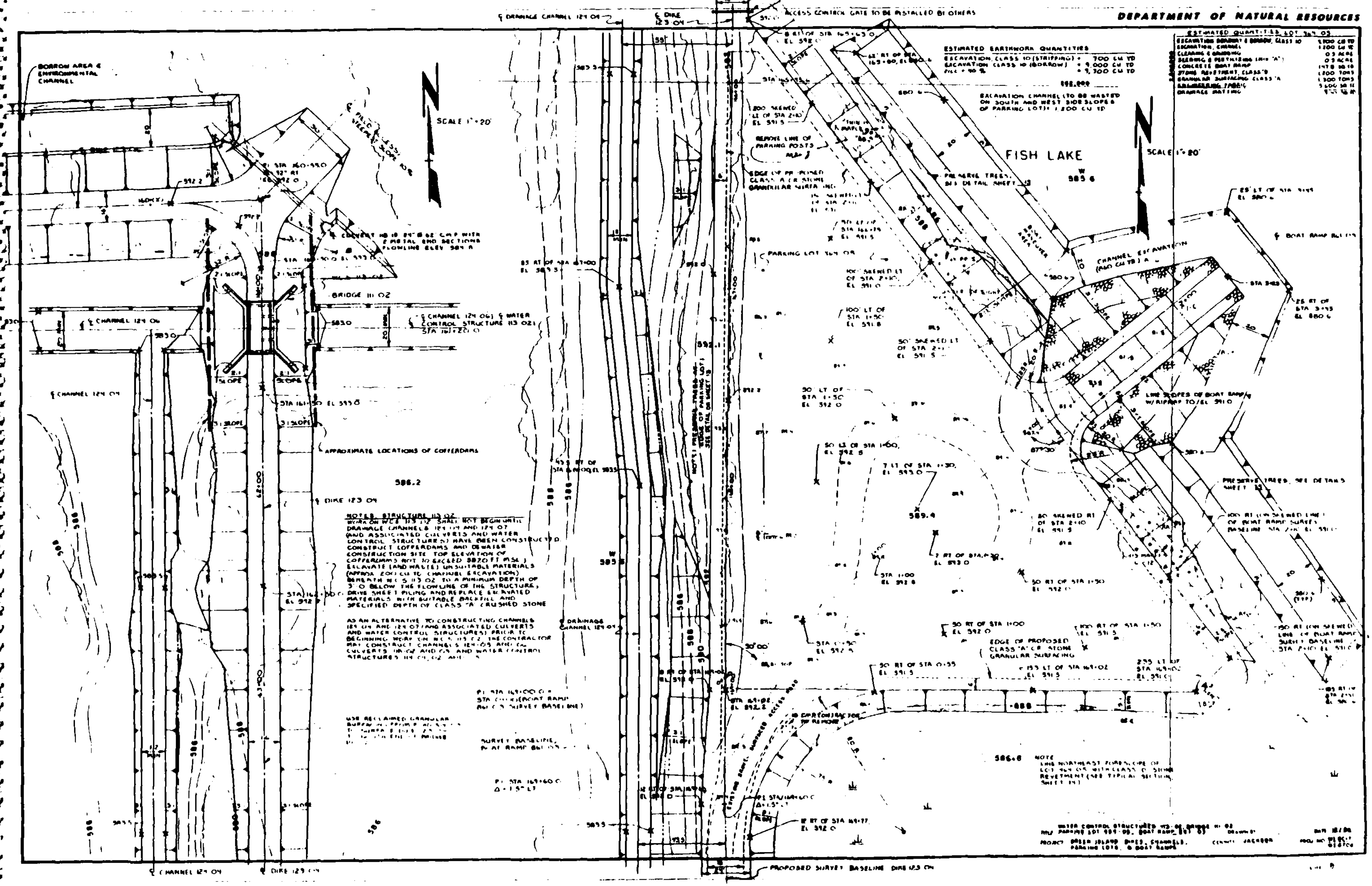


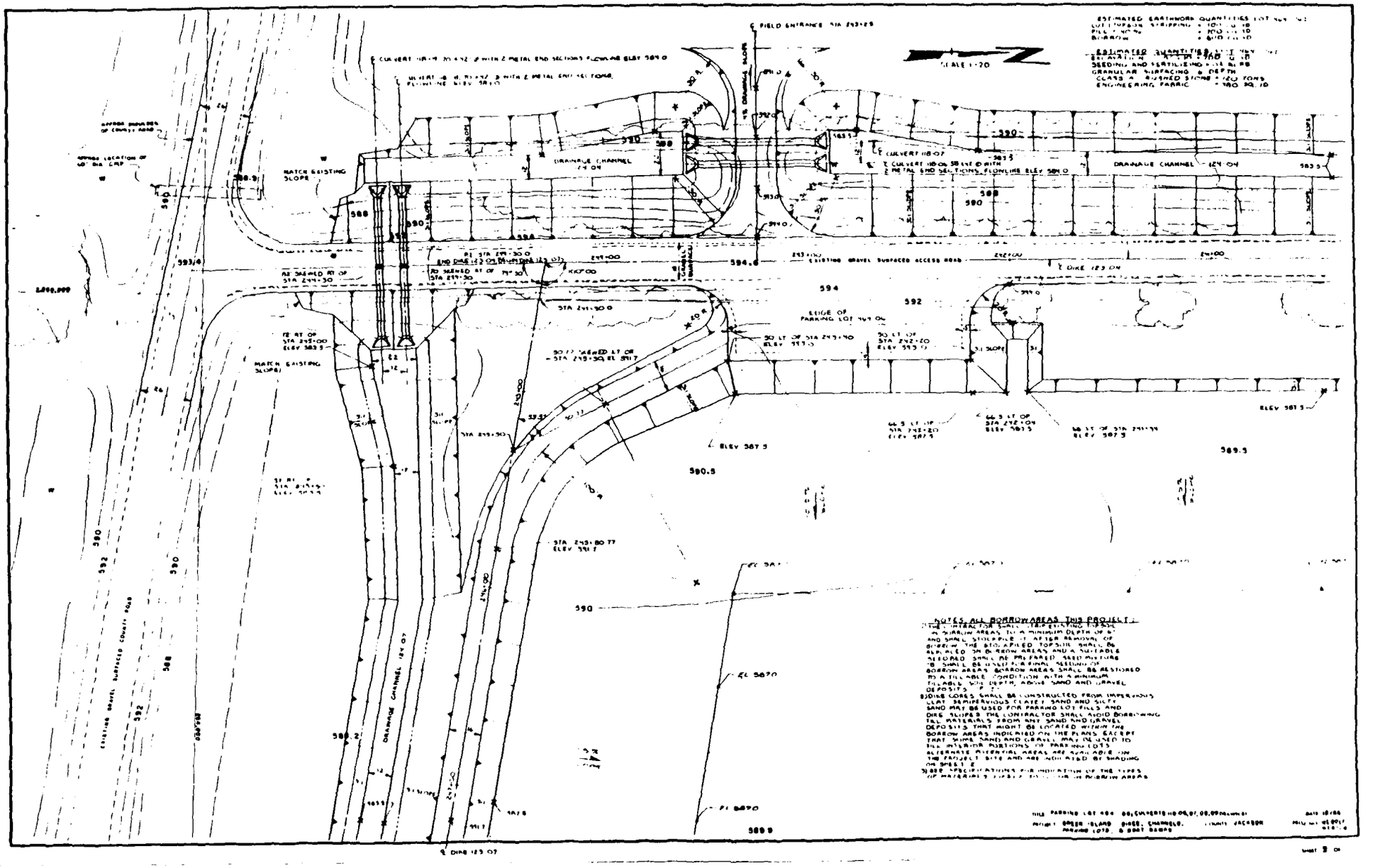
DEPARTMENT OF NATURAL RESOURCES

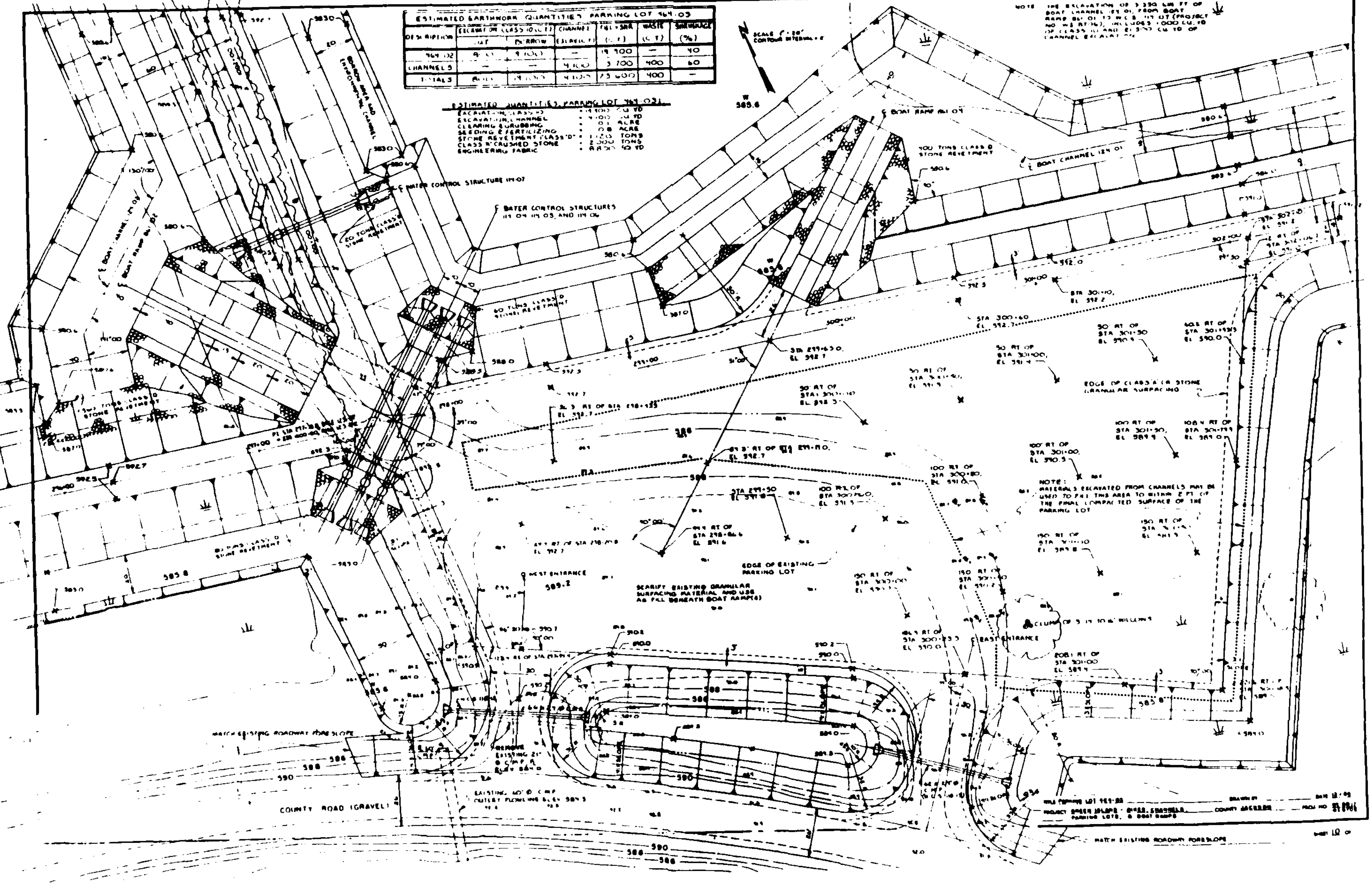



DEPARTMENT OF NATURAL RESOURCES
ROAD PROFILE
SCALE 1" = 200'
TYPICAL CROSS SECTION
PLAN
SCALE 1" = 200'
PLAN OF DESIGNATED BORROW AREAS
TYPICAL SECTION - DIKE 123-01
BOAT CHANNEL 124-01
DIKE 123-01
ENVIRONMENTAL CHANNEL
NORMAL POOL ELEV 585.6
EXISTING GROUND
CURVE DATA
PROPOSED CURVE DATA
DESIGNATED BORROW AREA


PROPOSED SURVEY BASELINE
VERT. CURVE DATA
HORIZ. CURVE DATA
SCALE 1" = 20'
FIELD ENTRANCE
MATCH EXISTING
DRAINAGE CHANNEL
DRAINAGE SLOPE
MATCH EXISTING
TOP OF REVETMENT STONE ELEV. 583.8
TIMBER PLANK AND PIPE SUPPORTS
HEAVY DUTY RUBBER CHECK VALVE (TYP.)
TOP OF REVETMENT STONE, ELEV. 583.8
FLOW
MAQUOKETA RIVER
593.7
593.6
584.8
590
592
594
596
598
600


DEPARTMENT OF NATURAL RESOURCES
FISH LAKE
SCALE 1" = 20'
ESTIMATED EARTHWORK QUANTITIES
ESTIMATED QUANTITIES LOT 164 05
ACCESS CONTROL GATE TO BE INSTALLED BY OTHERS
BORROW AREA & ENVIRONMENTAL CHANNEL
BRIDGE 111 02
APPROXIMATE LOCATIONS OF COFFERDAMS
586.2
DIKE 123 04
CHANNEL 124 04
DRAINAGE CHANNEL 124 04
CHANNEL EXCAVATION
PARKING LOT 164 05
589.4
586.8
BOAT RAMP BASELINE
PROPOSED SURVEY BASELINE DIKE 123 04

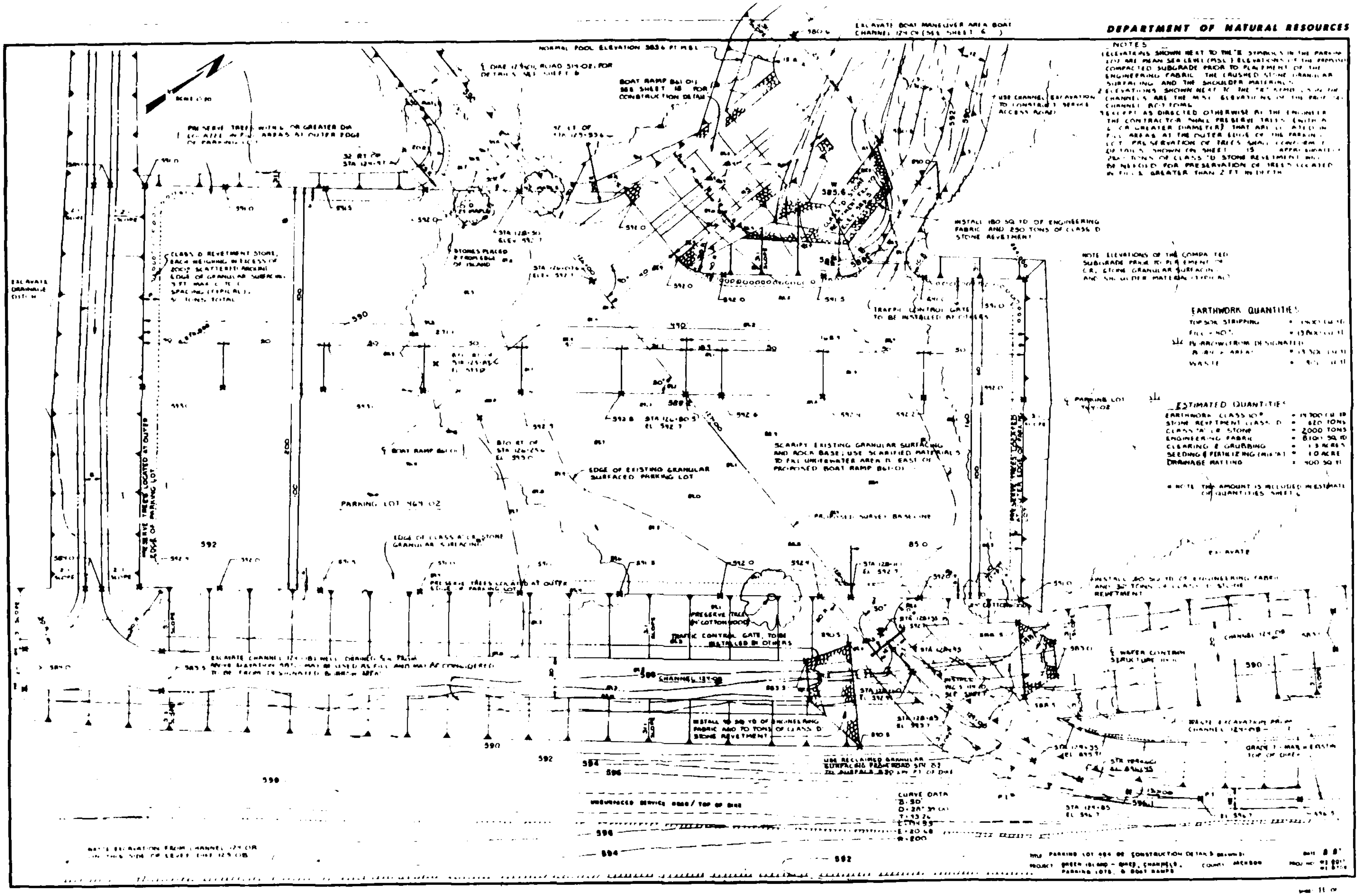

ESTIMATED EARTHWORK QUANTITIES LOT
LUFTUPSOIL STRIPPING = 100 CU YD
FILL = 700 CU YD
BORROW = 600 CU YD
ESTIMATED QUANTITIES LOT
EXCAVATION = 160 CU YD
SEEDING AND FERTILIZING = 0.5 ACRES
GRANULAR SURFACING 6 DEPTH
CLASS A CRUSHED STONE = 120 TONS
ENGINEERING FABRIC = 180 SQ YD
SCALE 1"=20'
E FIELD ENTRANCE STA 243+25
E CULVERT 18" CMP 30' LONG WITH 2 METAL END SECTIONS FLOWLINE ELEV 589.0
E CULVERT 18" CMP 30' LONG WITH 2 METAL END SECTIONS FLOWLINE ELEV 589.0
DRAINAGE CHANNEL 2% GR
DRAINAGE CHANNEL - 12% GR
EXISTING GRAVEL SURFACED ACCESS ROAD
E DIKE 123 GR
ELEV 587.5
ELEV 587.5
ELEV 587.5
ELEV 587.5
NOTES ALL BORROW AREAS THIS PROJECT
SEE SPECIFICATIONS FOR INDICATION OF THE TYPES

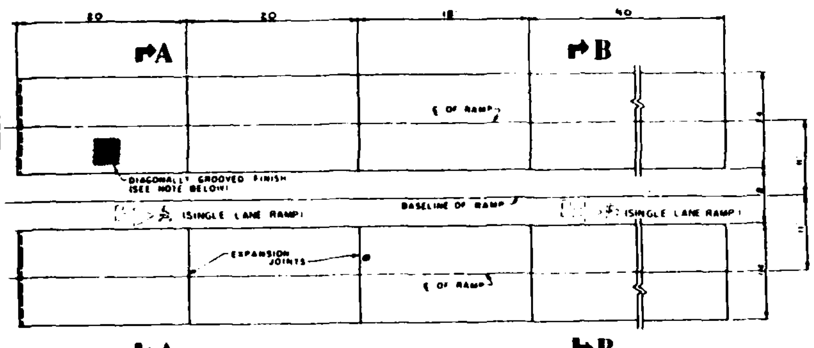


ESTIMATED EARTHWORK QUANTITIES PARKING LOT 169-05						
DESCRIPTION	EXCAVATION CLASS (C.Y.) CUT	BORROW	CHANNEL EXCAVATION	FILL + SHR (C.Y.)	WASTE (C.Y.)	SHRINKAGE (%)
169-02	[illegible]	9,000	—	19,900	—	40
CHANNELS	—	—	4,100	3,700	400	60
TOTALS	[illegible]	[illegible]	4,100	23,600	400	—

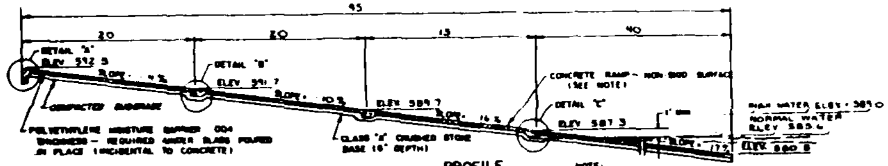
ESTIMATED QUANTITIES, PARKING LOT 169-03

EXCAVATION, CLASS 10	= 19,900 CU YD
EXCAVATION, CHANNEL	= 4,100 CU YD
CLEARING & GRUBBING	= 0.1 ACRE
SEEDING & FERTILIZING	= 0.8 ACRE
STONE REVETMENT CLASS "D"	= 1,120 TONS
CLASS "A" CRUSHED STONE	= 2,000 TONS
ENGINEERING FABRIC	= 8,800 SQ YD


DEPARTMENT OF NATURAL RESOURCES
NOTES
NORMAL POOL ELEVATION 585.6 FT M.S.L.
BOAT RAMP B61-01 SEE SHEET 18 FOR CONSTRUCTION DETAIL
INSTALL 180 SQ YD OF ENGINEERING FABRIC AND 250 TONS OF CLASS D STONE REVETMENT
TRAFFIC CONTROL GATE TO BE INSTALLED BY OTHERS
EARTHWORK QUANTITIES
TOPSOIL STRIPPING
WASTE
ESTIMATED QUANTITIES
STONE REVETMENT CLASS D = 620 TONS
CLASS "A" CR. STONE = 2000 TONS
CLEARING & GRUBBING
DRAINAGE MATTING = 400 SQ YD
SCARIFY EXISTING GRANULAR SURFACING AND ROCK BASE; USE SCARIFIED MATERIALS TO FILL UNDERWATER AREA N. EAST OF PROPOSED BOAT RAMP B61-01
EDGE OF EXISTING GRANULAR SURFACED PARKING LOT
PARKING LOT 469-02
PROPOSED SURVEY BASELINE
PRESERVE TREE (6" COTTONWOOD)
TRAFFIC CONTROL GATE, TO BE INSTALLED BY OTHERS
CHANNEL 127-08
WATER CONTROL STRUCTURE
CURVE DATA
UNSURFACED SERVICE ROAD / TOP OF DIKE
EXCAVATE DRAINAGE DITCH
EXCAVATE



PLAN - DOUBLE LANE BOAT RAMP
NOT TO SCALE



PROFILE
SCALE: 1/8" = 1'-0"

NOTE: CONCRETE RAMP - FINISH SHALL BE GROOVED DIAGONALLY TO FORM A NON-SKID SURFACE - MIN 1/2" DEPTH, MAX 2" BETWEEN GROOVES AND/OR AS DIRECTED BY THE ENGINEER

GENERAL NOTES

ALL CONCRETE SHALL CONFORM TO CLASS "C", MIX 4 IDOT SPECIFICATION SERIES 1984

ALL EXPOSED EDGES OF CONCRETE TO BE BEVELED WITH 3/4" CHAMFER STRIP

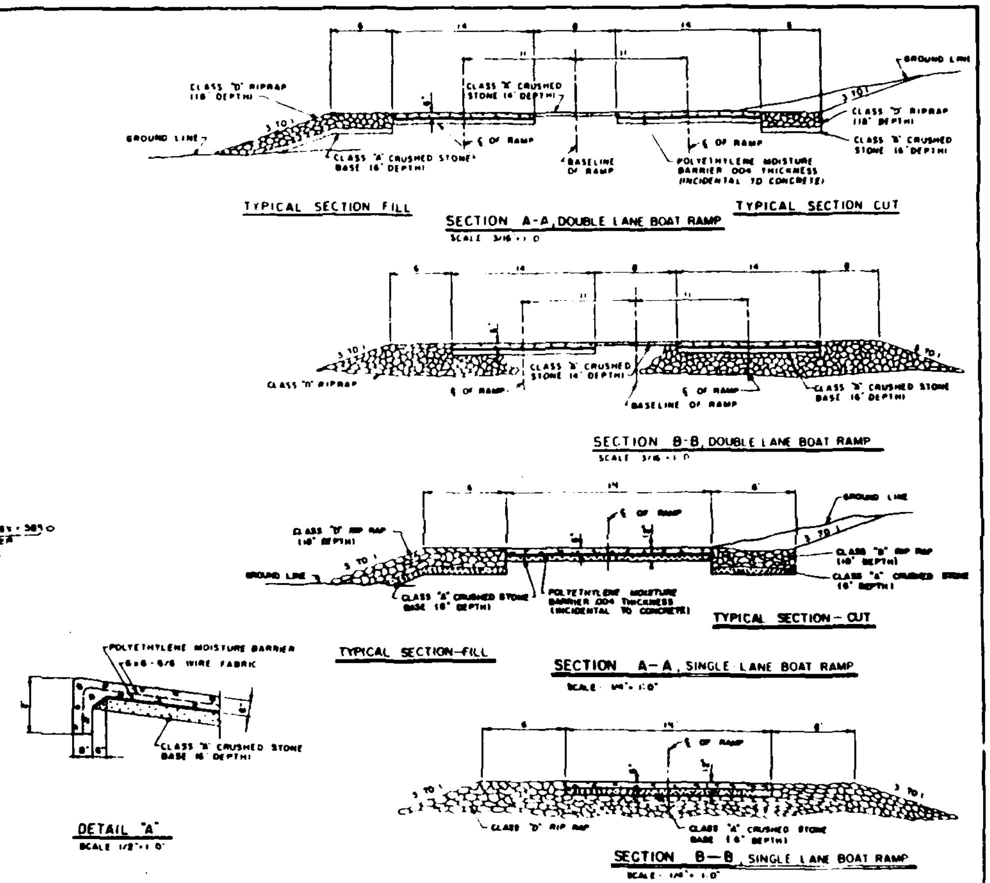
THE TOP 1" OF ALL EXPANSION JOINTS TO RECEIVE A POURING TYPE SEALER

EXPANSION JOINTS - 3/4" PREFORMED BITUMINOUS JOINT MATERIAL

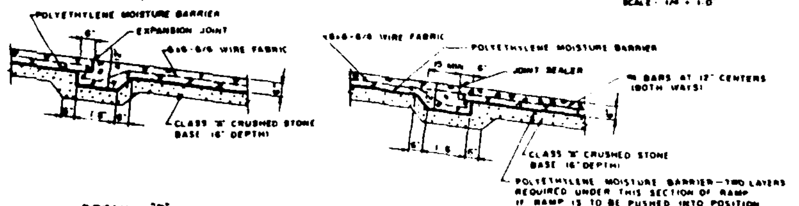
REINFORCING STEEL - MINIMUM LAP - 24 BAR DIAMETERS

WIRE FABRIC - MINIMUM LAP - 6"

THAT PORTION OF THE RAMP TO BE PLACED BELOW THE WATERLINE MAY BE FORMED ABOVE THE WATERLINE AND CAREFULLY PUSHED INTO POSITION UNDERWATER TO THE LOCATION AND ELEVATION AS SHOWN ON THE PLAN AND AS DIRECTED BY THE ENGINEER. THE REMAINING SECTIONS OF RAMP SHALL BE FORMED IN PLACE



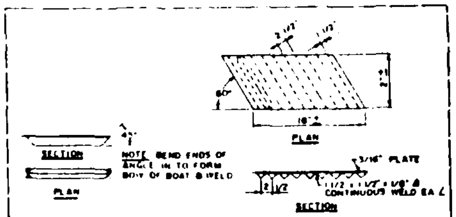
DETAIL "A"
SCALE: 1/2" = 1'-0"



DETAIL "B"
SCALE: 1/2" = 1'-0"

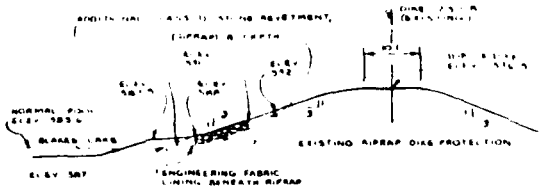
DETAIL "C"
SCALE: 1/2" = 1'-0"

NOTE: EXPANSION JOINT MATERIAL, WIRE FABRIC & REINFORCING STEEL TO BE INCIDENTAL TO CONCRETE



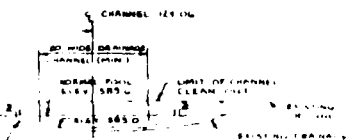
DETAIL OF GROOVING DEVICE
NOT TO SCALE

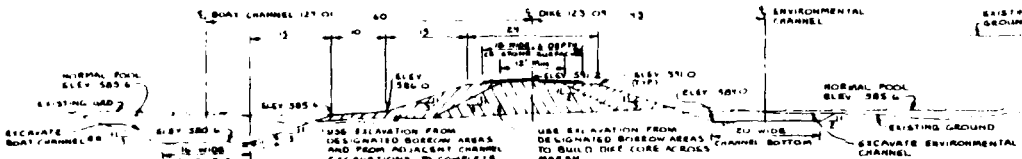
BOAT RAMP CONSTRUCTION DETAILS
JACKSON
BOAT RAMPS - GREEN ISLAND WMA



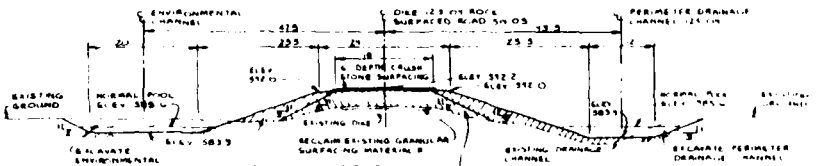
TYPICAL SECTION
DIKE 123 08, ADJACENT TO
BLAKES LAKE
NO SCALE

TYPICAL SECTION - DIKE 123 06
AND DRAINAGE CHANNEL 124 - 06
SCALE 1" = 10'

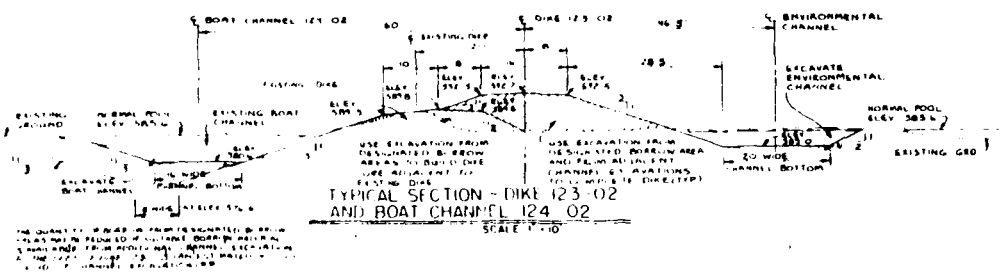




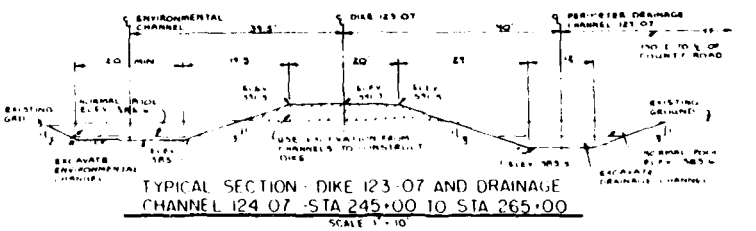
TYPICAL SECTION - DIKE 123-09
SCALE 1" = 10'



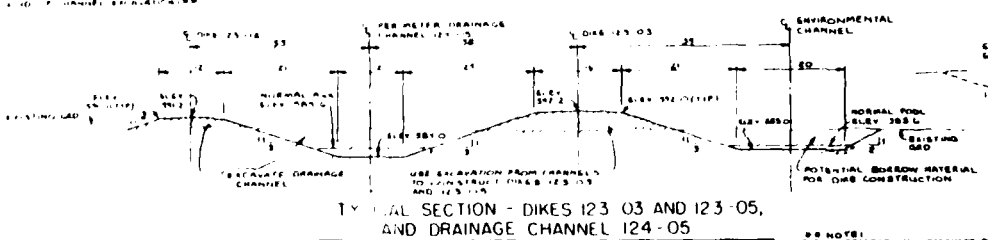
TYPICAL SECTION - DIKE 123-04
AND PERIMETER DRAINAGE CHANNEL 124-04
SCALE 1" = 10'



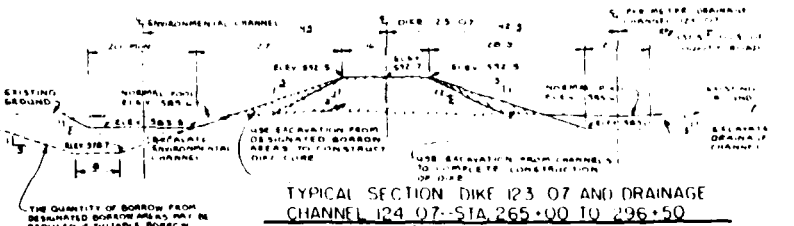
TYPICAL SECTION - DIKE 123-02
AND BOAT CHANNEL 124-02
SCALE 1" = 10'



TYPICAL SECTION - DIKE 123-07 AND DRAINAGE
CHANNEL 124 07 -STA 245+00 TO STA 265+00
SCALE 1" = 10'



TYPICAL SECTION - DIKES 123 03 AND 123-05,
AND DRAINAGE CHANNEL 124-05
SCALE 1" = 10'

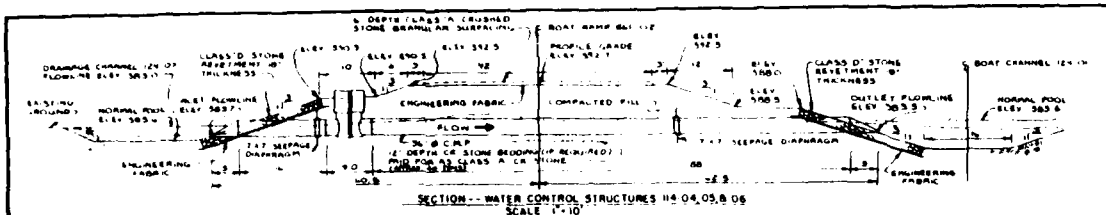


TYPICAL SECTION DIKE 123 07 AND DRAINAGE
CHANNEL 124 07-STA 265+00 TO 296+50
SCALE 1" = 10'

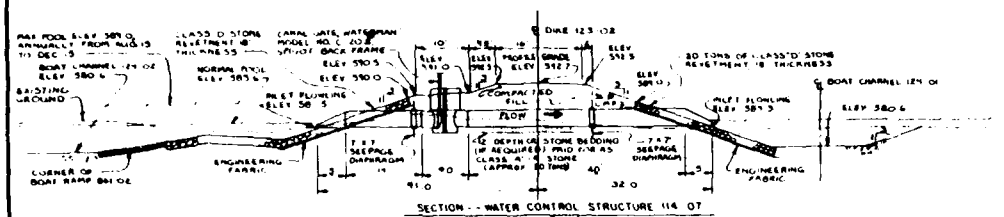
P.S. NOTE:
THE CONTRACTOR SHALL EXCAVATE TO ELEV 575 & AT SELECTED LOCATIONS, IF SO DIRECTED BY THE INSPECTOR, FOR THE PURPOSE OF CREATING BETTER FISH HABITAT BUT ONLY IF THE INSPECTOR DETERMINES THAT THE ADDITIONAL CHANNEL EXCAVATION IS SUITABLE FOR DIKE CONSTRUCTION. THE CONTRACTOR SHALL RECEIVE PAYMENT FOR THE EXTRA QUANTITIES OF CLASS 10 EXCAVATION AND CHANNEL EXCAVATION.

THE QUANTITY OF BORROW FROM DESIGNATED BORROW AREAS MAY BE REDUCED IF SUITABLE BORROW MATERIAL IS AVAILABLE FROM ADDITIONAL CHANNEL EXCAVATION TO THE LEFT OF DIKE 123 07 (AN ESTIMATED 17,200 C.Y. OF CHANNEL EXCAVATION).

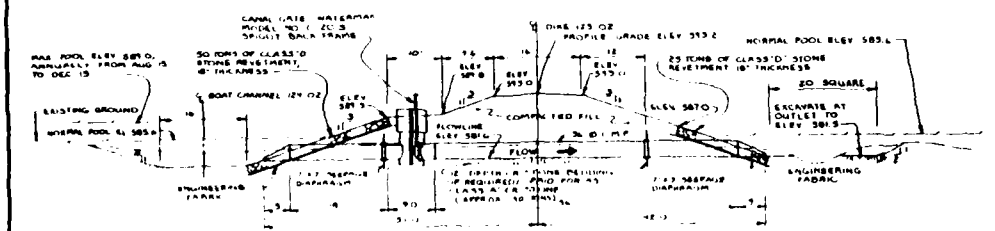
CONSTRUCTION DETAILS & TYPICAL SECTIONS
PROJECT GREEN ISLE AND WMA - DIKES COUNTY JACKSON



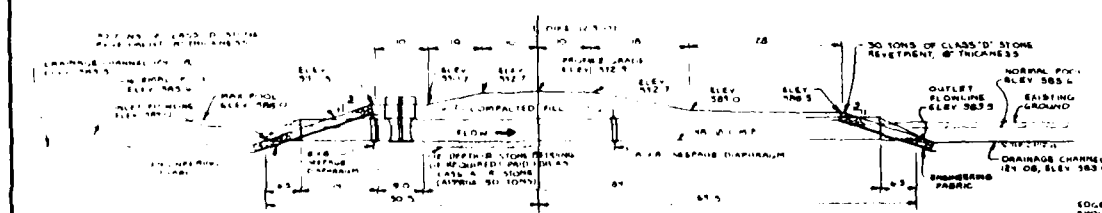
SECTION - - WATER CONTROL STRUCTURES 114 04, 05, & 06
SCALE 1"=10'



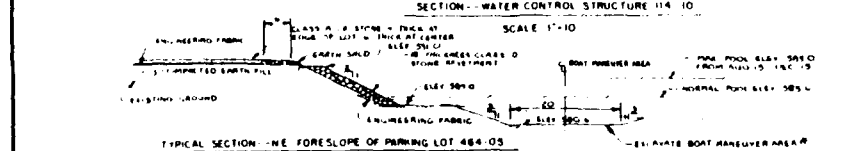
SECTION - - WATER CONTROL STRUCTURE 114 07
SCALE 1"=10'



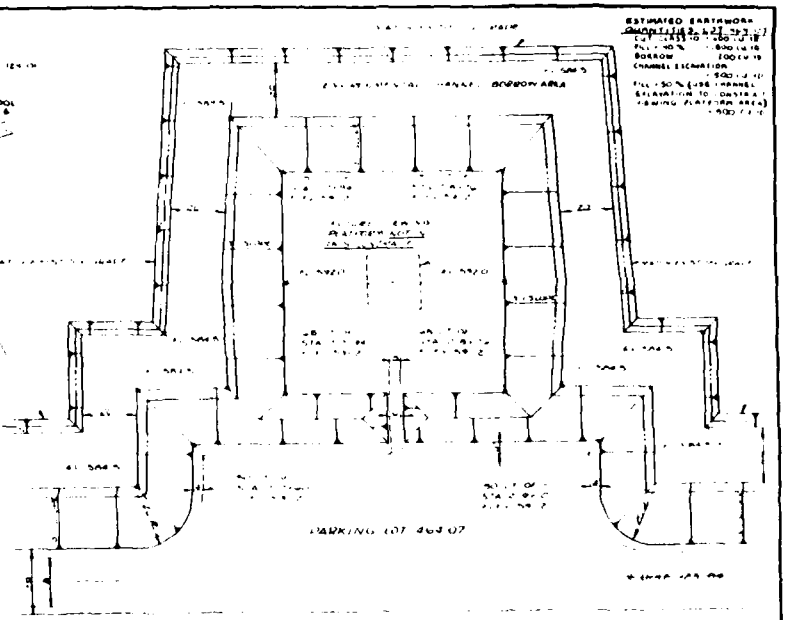
SECTION - - WATER CONTROL STRUCTURES 114 08, & 09
SCALE 1"=10'



SECTION - - WATER CONTROL STRUCTURE 114 10
SCALE 1"=10'

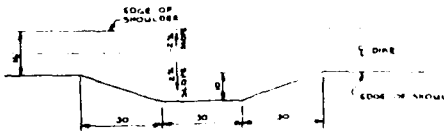


TYPICAL SECTION - - NE FORESLOPE OF PARKING LOT 464-05
SCALE 1"=10'

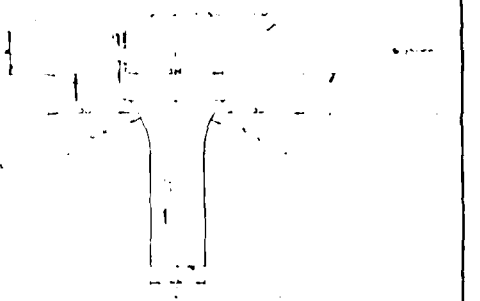


DETAIL - PARKING LOT 464-07
SCALE 1"=20'

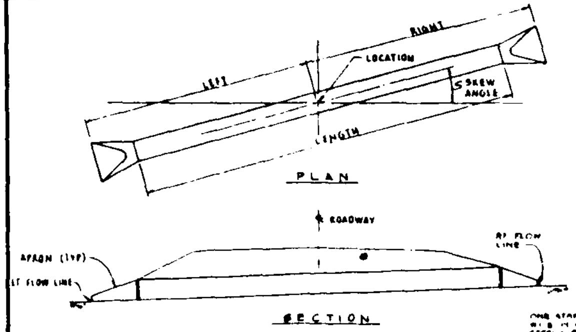
ESTIMATED QUANTITIES, LOT 464-07
EXCAVATION - CLASS 10 = 8,500 CU. YD.
EXCAVATION - CHANNEL = 500 CU. YD.
SEEDING & FERTILIZING = 1.0 ACRE
ANNULAR SURFACING = 0.1 TONS
ENGINEERING FABRIC = 600 SQ. YD.



DETAIL - PULL OFF AREA (TYPICAL)
SCALE 1"=10'



DETAIL - COMBINED PULL OFF AREA & FIELD ACCESS
SCALE 1"=20'

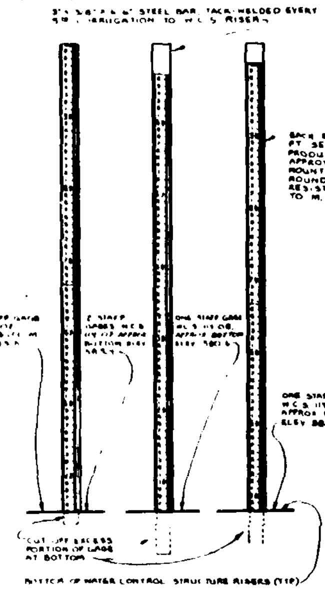


CULVERT - TYPE "A"
NO SCALE

CULVERT DATA									
LOCATION	SKEW AHEAD	TYPE	SIZE (IN)	LENGTH (LIN FT)	DIMENSIONS LT	DIMENSIONS RT	FLOW LINES LT	FLOW LINES RT	REMARKS
[illegible] 01			24	30	[illegible]	[illegible]	586.8	587.0	
[illegible] 02			48	30	31.0	30.5	584.0	584.0	
[illegible] 03			42	30	31.0	30.5	584.0	584.0	
[illegible] 04			42	30	30.8	30.8	584.0	584.0	
[illegible] 05			42	30	30.8	30.8	584.0	584.0	
[illegible] 06			42	[illegible]	34.8	34.8	584.0	584.0	
[illegible] 07			42	58	34.8	34.8	584.0	584.0	
[illegible] 08			42	70	40.8	40.8	584.0	584.0	
[illegible] 09			42	70	40.8	40.8	584.0	584.0	
[illegible] 10			42	[illegible]	33.8	33.8	584.0	584.0	
[illegible] 11			42	[illegible]	33.8	33.8	584.0	584.0	
[illegible] 12			24	64	39.4	37.4	584.5	584.5	
[illegible] 13			24	62	34.4	34.4	584.5	584.5	
[illegible] 14	90°		24	54	29.4	31.4	584.5	584.5	
[illegible] 15			24	62	34.4	34.4	584.5	584.5	

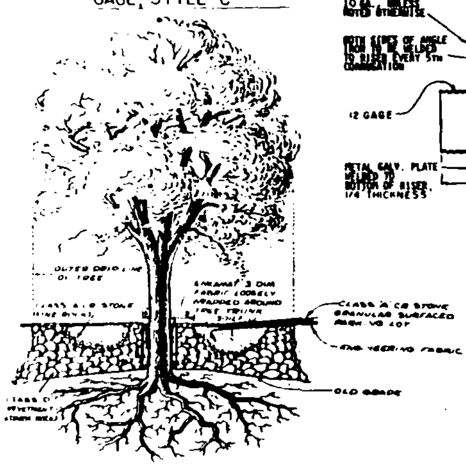
NOTES CORRUGATED METAL PIPES FOR CULVERTS SHALL BE GALVANIZED AND BITUMINOUS COATED CONFORMING TO I.D.O.T. STANDARD ROAD PLAN RF-5 AND TO I.D.O.T. STANDARD SPECIFICATION SECTIONS 2417 AND 4141.

24" DIAMETER PIPE AND METAL END SECTIONS (APRONS) SHALL BE 16 GAGE. 42" DIAMETER PIPE AND APRONS SHALL BE 12 GAGE.



DETAIL -- STAFF TYPE STREAM GAGE, STYLE "C"

EACH STAFF GAGE SHALL CONSIST OF TWO 3.5 FT. SECTIONS OF "STEVENS WATER RESOURCES PRODUCTS" STYLE "C" STREAM GAGE OR APPROVED EQUAL. FASTEN GAGE SECTIONS TO MOUNTING BASE PLATE WITH NO. 8 3/8" LENGTH ROUND HEAD SELF TAPPING SCREWS (CORROSION RESISTANT), WITH MARKINGS CORRESPONDING TO M.S.L. ELEVATION.

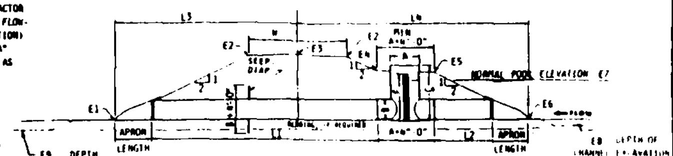


DETAIL -- PRESERVATION OF TREES LOCATED IN FILL AREAS

NO SCALE

NOTE: IF REQUIRED FOR PROPER BEDDING, THE ENGINEER SHALL DIRECT THE CONTRACTOR TO OVER-EXCAVATE 12" BELOW PIPE FLOW-LINE ELEVATION (CLASS 10 EXCAVATION) AND PLACE 12" DEPTH OF CLASS "A" CRUSHED STONE BEDDING (PAID FOR AS ITEM NO. 8).

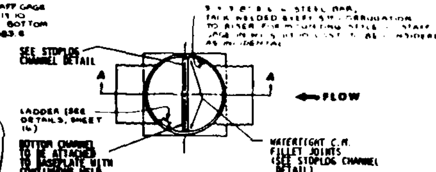
UNLESS NOTED OTHERWISE, EACH WATER CONTROL STRUCTURE SHALL INCLUDE 2 METAL APRONS AND A SEEPAGE DIAPHRAGM, INSTALLED AS SHOWN IN THE DRAWING BELOW.



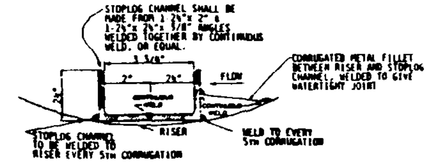
TYPICAL SECTION OF DIKE AT STRUCTURE, STRUCTURE DIMENSIONS AND ELEVATIONS

NO SCALE

CONTROL STRUCTURE NO.	A (IN.)	B (IN.)	C (FT.)	F (FT.)	L1 (FT.)	L2 (FT.)	L3 (FT.)	L4 (FT.)	W (FT.)	E1	E2	E3	E4	E5	E6	E7	E8	E9	SEEP DIAP SIZE (FT. x FT.)	NO. OF APRON	NO. STOP LOGS	REMARKS
114-04	60	36	8	8	88	16	[illegible]	60.5	48	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	8	INSTALL [illegible] LADDER [illegible]
114-05						(SAME	AS	ABOVE)											[illegible]	2	8	INSTALL [illegible] LADDER [illegible]
114-06						(SAME	AS	ABOVE)											[illegible]	2	8	INSTALL [illegible] LADDER [illegible]
114-10	60	48	8	8	84	16	[illegible]	[illegible]	[illegible]	583.5	[illegible]	592.9	[illegible]	590.5	[illegible]	[illegible]	583.5	583.0	8 x 8	2	16	INSTALL [illegible] LADDER [illegible]; INSTALL TYPE C STAFF GAGE

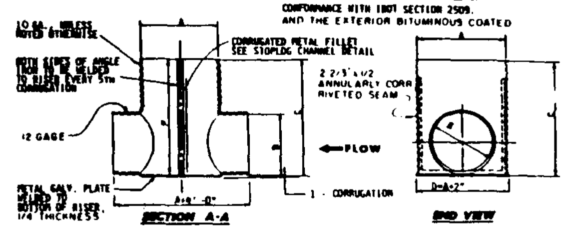


TOP VIEW



STOPLOG CHANNEL CONSTRUCTION DETAILS

NOTE: AFTER FABRICATION, RISER SECTION SHALL BE HOT-DIP GALVANIZED, OR PAINTED IN CONFORMANCE WITH IDOT SECTION 2509, AND THE EXTERIOR BITUMINOUS COATED.



SECTION A-A

END VIEW

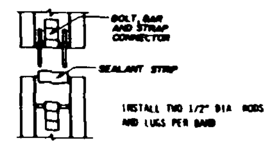
NOTE ALL STAFF GAGES INSTALLED IN OR ON WATER CONTROL STRUCTURES THIS PROJECT, SHALL BE INSTALLED AFTER STRUCTURES HAVE BEEN CONSTRUCTED AND BACKFILL HAS BEEN PLACED. MARKINGS SHALL CORRESPOND TO MEAN SEA LEVEL ELEVATIONS AS VERIFIED BY VERTICAL CONTROL SURVEY.

NOTES CORRUGATED METAL PIPES FOR WATER CONTROL STRUCTURES SHALL BE HELICALLY CORRUGATED CONTINUOUS WELDED SEAM GALVANIZED AND BITUMINOUS COATED. 36" DIAMETER PIPE AND METAL END SECTIONS (APRONS) SHALL BE 14 GAGE. 48" DIAMETER PIPE AND APRONS SHALL BE 12 GAGE.

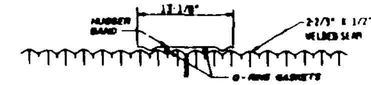
LADDERS, HINGED GRATES 72" DIA x 4 LENGTH C.M.P.'S AND CONCRETE SHALL BE INSTALLED ON RISER SECTIONS FOR W.C.S. 114-04, 05, 06, 810, IN CONFORMANCE WITH DETAILS SHOWN ON SHEET 16.

CORRUGATED METAL PIPES FOR THE RISER SECTIONS SHALL BE ANNULARLY CORRUGATED AND RIVETED SEAM OR HELICALLY CORRUGATED AND CONTINUOUS WELDED SEAM WITH 2 2/3"x1/2" CORRUGATIONS GALVANIZED, AND BITUMINOUS COATED ON THE RISER EXTERIOR.

STYLE "C" STAFF TYPE STREAM GAGES AND MOUNTING BASE PLATES SHALL BE INSTALLED IN THE DESIGNATED WATER CONTROL STRUCTURES. COST TO BE CONSIDERED AS INCIDENTAL TO THE COST OF C.M.P. RISER SECTIONS (SEE DETAILS ABOVE).

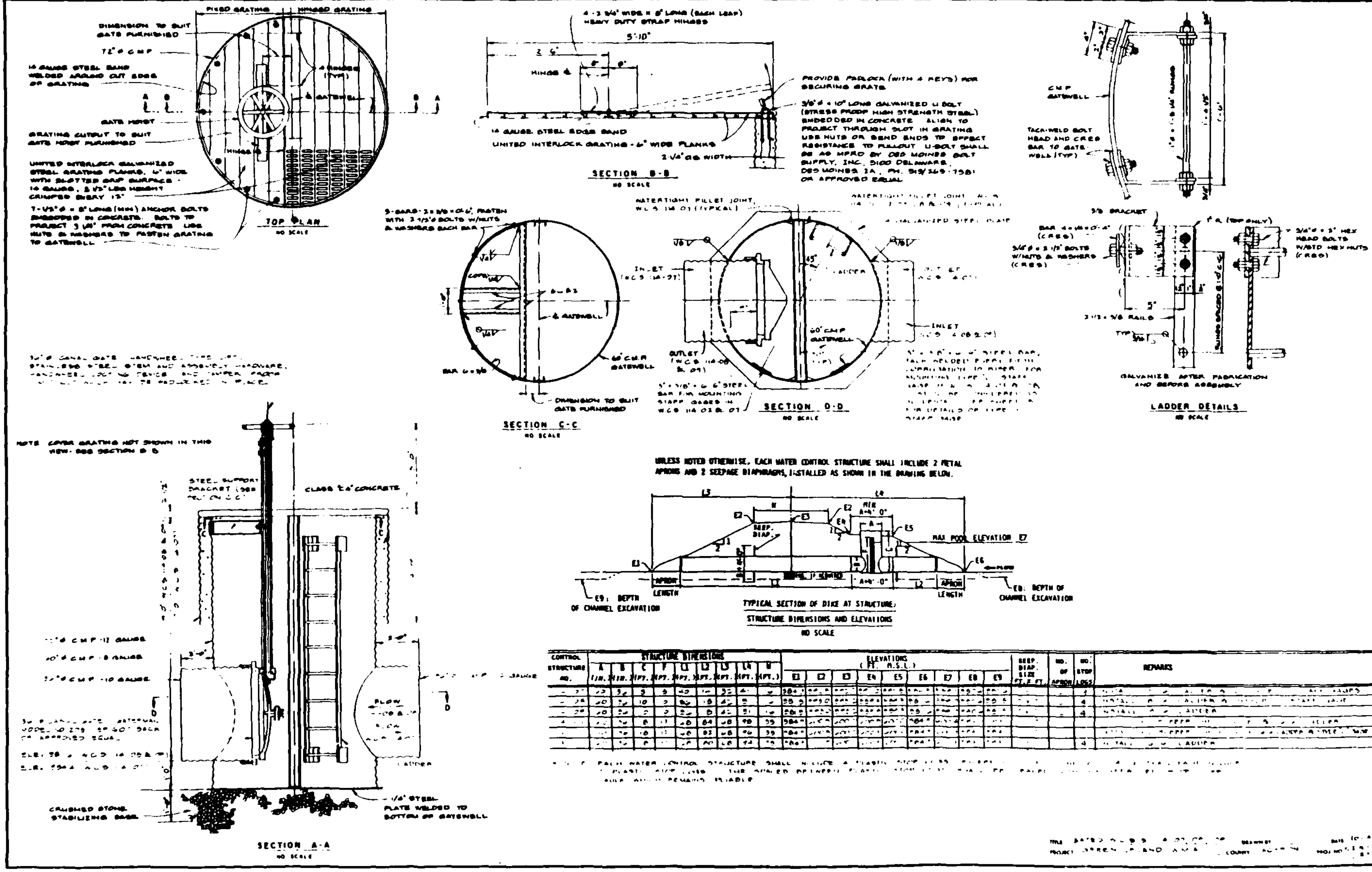


CONNECTION DETAIL (SINGLE HARNESS)



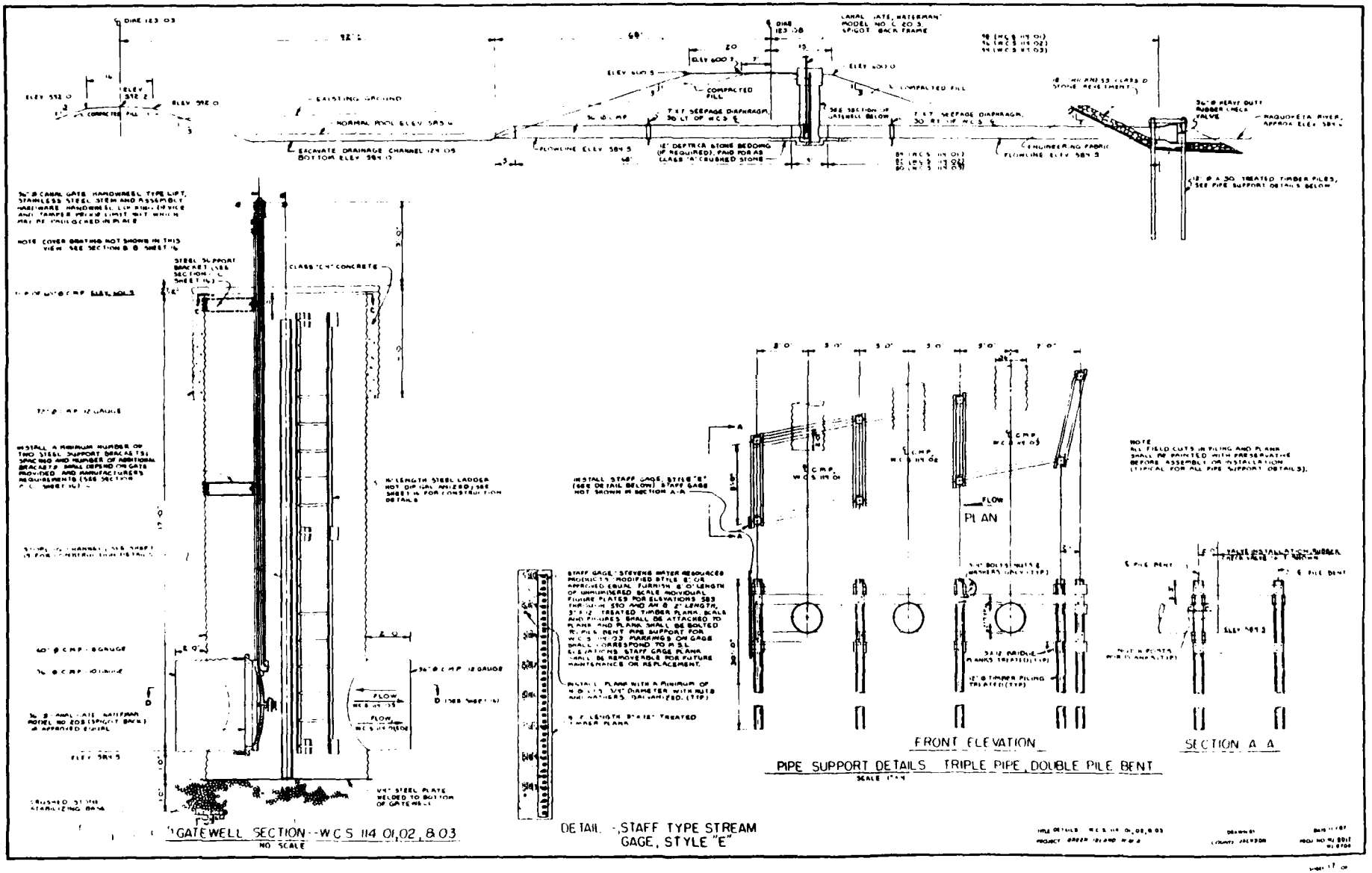
JOINT DETAIL

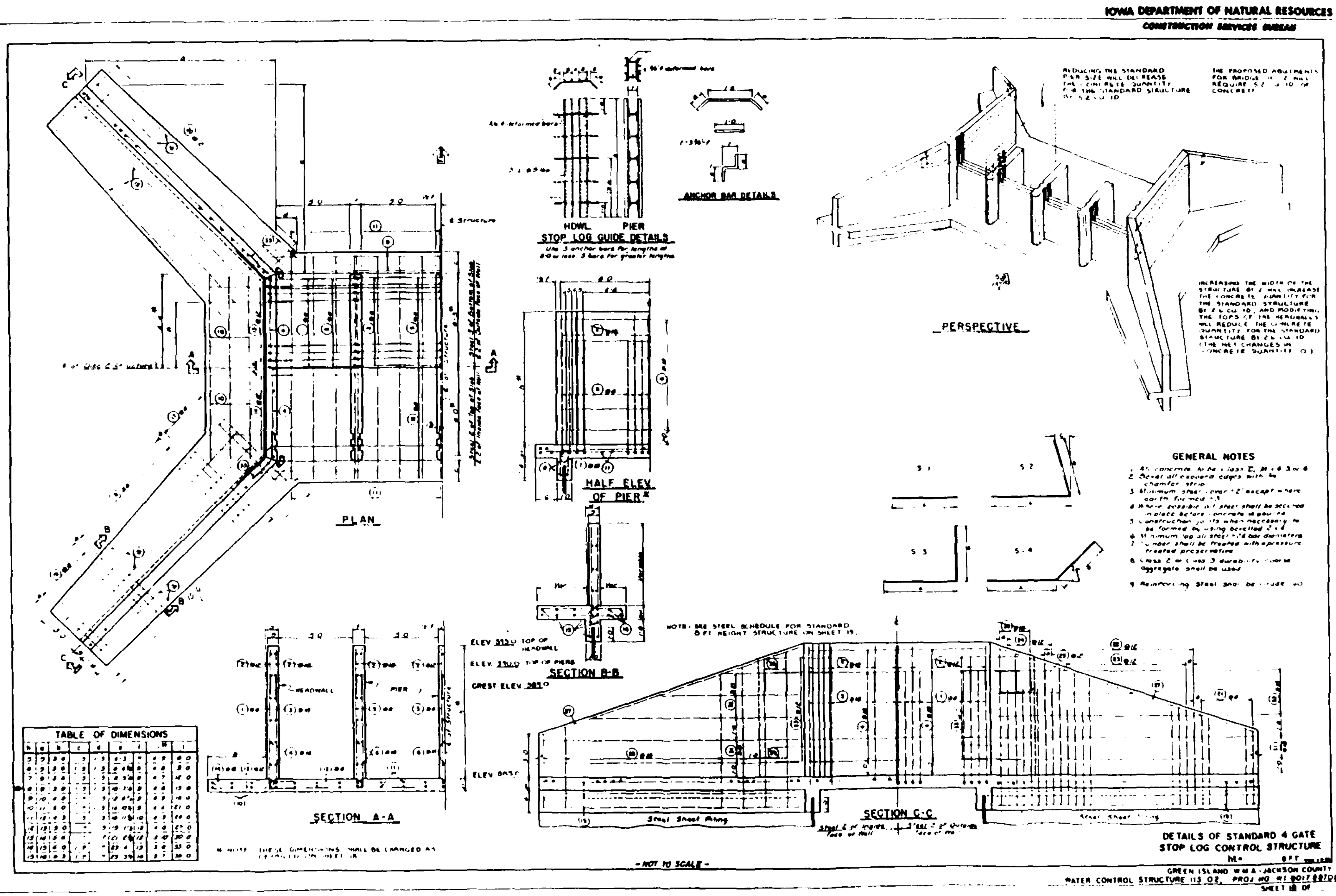
THE DETAILS FOR CULVERTS & W.C.S. 114-04, 05, 06 & 10 ... DATE 10/81
PROJECT GREEN ISLAND WMA ... COUNTY JACKSON ... PROJ. NO. [illegible]

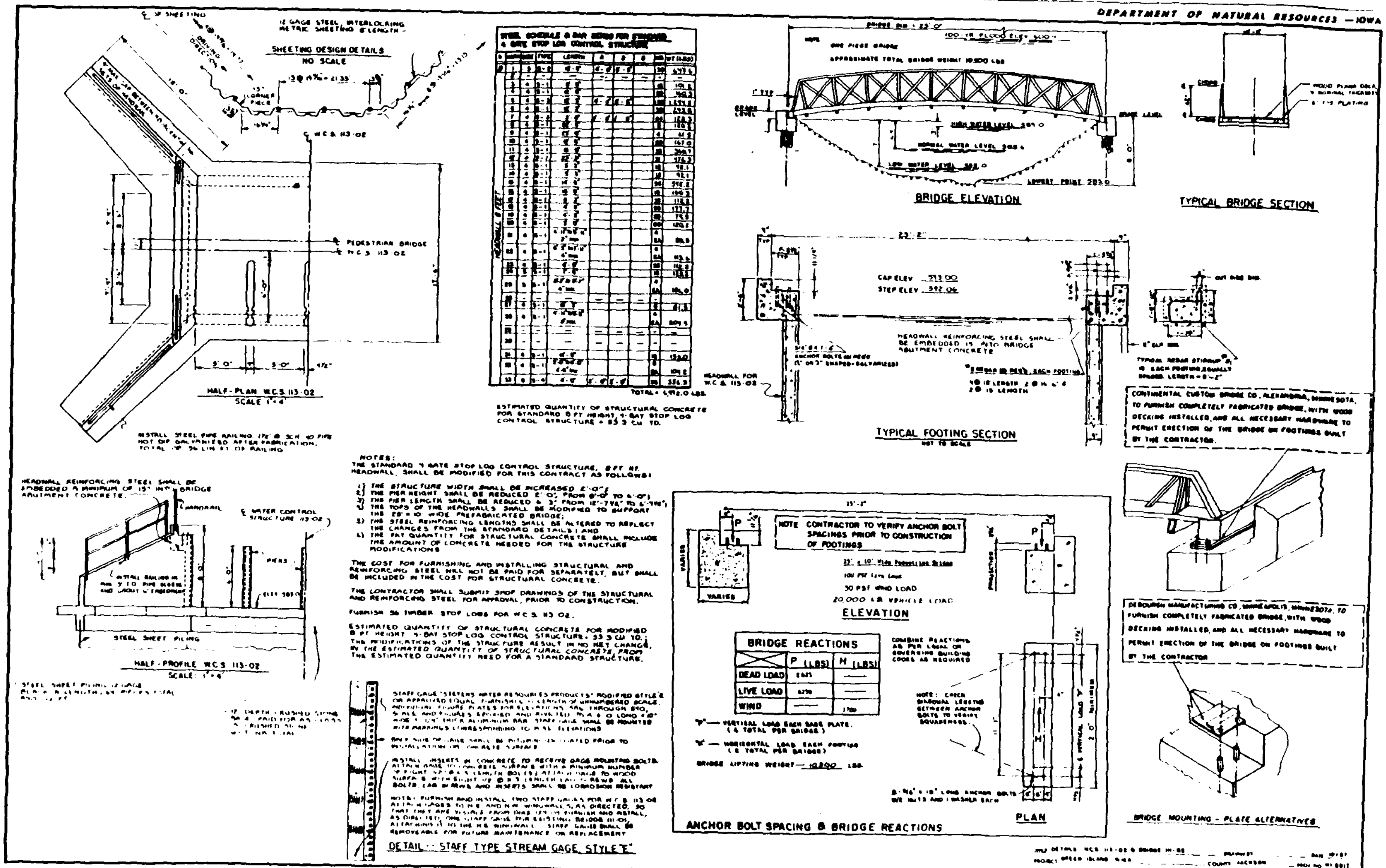


CONTROL STRUCTURE NO.	STRUCTURE DIMENSIONS A (IN.)	B (IN.)	C (FT.)	F (FT.)	L1 (FT.)	L2 (FT.)	L3 (FT.)	L4 (FT.)	M (FT.)	ELEVATIONS (FT. M.S.L.) E1	E2	E3	E4	E5	E6	E7	E8	E9	SEEP. DIAP. SIZE FT. x FT.	NO. OF APRON	NO. STOP LOGS	REMARKS
[illegible]	[illegible]	[illegible]	9	5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4	[illegible]
[illegible]	[illegible]	[illegible]	8	[illegible]	[illegible]	64	[illegible]	[illegible]	55	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]
[illegible]	[illegible]	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	55	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]
[illegible]	[illegible]	[illegible]	8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		4	[illegible]

[illegible]


PLAN
FRONT ELEVATION
SECTION A-A
PIPE SUPPORT DETAILS TRIPLE PIPE, DOUBLE PILE BENT
GATE WELL SECTION - W.C.S. 114.01, 02, & 03
NO SCALE
DETAIL - STAFF TYPE STREAM GAGE, STYLE "E"
EXISTING GROUND
NORMAL POOL ELEV. 585.4
EXCAVATE DRAINAGE CHANNEL
FLOWLINE ELEV. 584.5
COMPACTED FILL
ENGINEERING FABRIC
RAQUOPETA RIVER
FLOW


IOWA DEPARTMENT OF NATURAL RESOURCES
CONSTRUCTION SERVICES BUREAU
PLAN
HDWL
PIER
STOP LOG GUIDE DETAILS
ANCHOR BAR DETAILS
PERSPECTIVE
HALF ELEV OF PIER
SECTION B-B
SECTION A-A
SECTION C-C
TABLE OF DIMENSIONS
GENERAL NOTES
NOTE: SEE STEEL SCHEDULE FOR STANDARD 8 FT HEIGHT STRUCTURE ON SHEET 19.
Steel Sheet Piling
- NOT TO SCALE -
DETAILS OF STANDARD 4 GATE
STOP LOG CONTROL STRUCTURE
GREEN ISLAND W.M.A.-JACKSON COUNTY
WATER CONTROL STRUCTURE 113 O2, PROJ NO WI 9017 88708
SHEET 18 OF


DEPARTMENT OF NATURAL RESOURCES — IOWA
SHEETING DESIGN DETAILS
NO SCALE
12 GAGE STEEL, INTERLOCKING METAL SHEETING 8' LENGTH
HALF-PLAN W.C.S. 113-02
SCALE 1" = 4'
PEDESTRIAN BRIDGE
W.C.S. 113-02
STEEL SCHEDULE & BAR BENDS FOR STANDARD 4 GATE STOP LOG CONTROL STRUCTURE
TOTAL = 6,992.0 LBS.
ESTIMATED QUANTITY OF STRUCTURAL CONCRETE FOR STANDARD 8 FT HEIGHT, 4-BAY STOP LOG CONTROL STRUCTURE = 85.3 CU. YD.
100 YR FLOOD ELEV. 600.0
ONE PIECE BRIDGE
APPROXIMATE TOTAL BRIDGE WEIGHT 10,500 LBS
HIGH WATER LEVEL
NORMAL WATER LEVEL
LOW WATER LEVEL
BRIDGE ELEVATION
TYPICAL BRIDGE SECTION
CAP ELEV 593.00
STEP ELEV 592.06
HEADWALL REINFORCING STEEL SHALL BE EMBEDDED 15 INTO BRIDGE ABUTMENT CONCRETE
TYPICAL FOOTING SECTION
NOT TO SCALE
CONTINENTAL CUSTOM BRIDGE CO., ALEXANDRIA, MINNESOTA, TO FURNISH COMPLETELY FABRICATED BRIDGE, WITH WOOD DECKING INSTALLED, AND ALL NECESSARY HARDWARE TO PERMIT ERECTION OF THE BRIDGE ON FOOTINGS BUILT BY THE CONTRACTOR.
NOTES:
THE STANDARD 4 GATE STOP LOG CONTROL STRUCTURE, 8 FT HT. HEADWALL, SHALL BE MODIFIED FOR THIS CONTRACT AS FOLLOWS:
1) THE STRUCTURE WIDTH SHALL BE INCREASED 2'-0";
2) THE PIER HEIGHT SHALL BE REDUCED 2'-0", FROM 8'-0" TO 6'-0";
3) THE PIER LENGTH SHALL BE REDUCED 6.3" FROM 12'-7¼" TO 6'-4½";
4) THE TOPS OF THE HEADWALLS SHALL BE MODIFIED TO SUPPORT THE 25' × 10' WIDE PREFABRICATED BRIDGE;
5) THE STEEL REINFORCING LENGTHS SHALL BE ALTERED TO REFLECT THE CHANGES FROM THE STANDARD DETAILS; AND
6) THE PAY QUANTITY FOR STRUCTURAL CONCRETE SHALL INCLUDE THE AMOUNT OF CONCRETE NEEDED FOR THE STRUCTURE MODIFICATIONS
THE COST FOR FURNISHING AND INSTALLING STRUCTURAL AND REINFORCING STEEL WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE COST FOR STRUCTURAL CONCRETE.
THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE STRUCTURAL AND REINFORCING STEEL FOR APPROVAL, PRIOR TO CONSTRUCTION.
FURNISH 56 TIMBER STOP LOGS FOR W.C.S. 113-02.
ESTIMATED QUANTITY OF STRUCTURAL CONCRETE FOR MODIFIED 8 FT HEIGHT 4-BAY STOP LOG CONTROL STRUCTURE = 53.3 CU. YD.; THE MODIFICATIONS OF THE STRUCTURE RESULT IN NO NET CHANGE IN THE ESTIMATED QUANTITY OF STRUCTURAL CONCRETE FROM THE ESTIMATED QUANTITY NEED FOR A STANDARD STRUCTURE.
HALF-PROFILE W.C.S. 113-02
SCALE 1" = 4'
STEEL SHEET PILING
WATER CONTROL STRUCTURE 113-02
HANDRAIL
NOTE CONTRACTOR TO VERIFY ANCHOR BOLT SPACINGS PRIOR TO CONSTRUCTION OF FOOTINGS
100 PSF LIVE LOAD
30 PSF WIND LOAD
20,000 LB VEHICLE LOAD
ELEVATION
BRIDGE REACTIONS
P (LBS)
H (LBS)
DEAD LOAD
LIVE LOAD
WIND
COMBINE REACTIONS AS PER LOCAL OR GOVERNING BUILDING CODES AS REQUIRED
"P" — VERTICAL LOAD EACH BASE PLATE. (4 TOTAL PER BRIDGE)
"H" — HORIZONTAL LOAD EACH FOOTING (2 TOTAL PER BRIDGE)
BRIDGE LIFTING WEIGHT — 10,500 LBS.
NOTE: CHECK DIAGONAL LENGTHS BETWEEN ANCHOR BOLTS TO VERIFY SQUARENESS.
PLAN
ANCHOR BOLT SPACING & BRIDGE REACTIONS
DETAIL - STAFF TYPE STREAM GAGE, STYLE "E"
DEBOURGH MANUFACTURING CO., MINNEAPOLIS, MINNESOTA, TO FURNISH COMPLETELY FABRICATED BRIDGE, WITH WOOD DECKING INSTALLED, AND ALL NECESSARY HARDWARE TO PERMIT ERECTION OF THE BRIDGE ON FOOTINGS BUILT BY THE CONTRACTOR
BRIDGE MOUNTING - PLATE ALTERNATIVES
COUNTY JACKSON

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ENVIRONMENTAL ASSESSMENT
Green Island Wildlife Area Habitat
Development and Enhancement
Upper Mississippi River Pool 13
Jackson County, Iowa

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Honorable Thomas J. Tauke, Representative in Congress 698 Central Avenue Dubuque, IA 52001-7029	
Director, Advisory Council on Historic Preservation Old P.O. Building #809, 1100 Pennsylvania Avenue NW Washington, DC 20004	
Dr. Allan Hirsch - Director, Office of Federal Activities (A-104) U.S. Environmental Protection Agency, 401 M Street SW Washington, DC 20460	
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Director, Office of Habitat Protection National Marine Fisheries Service, NOAA Washington, DC 20235	
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